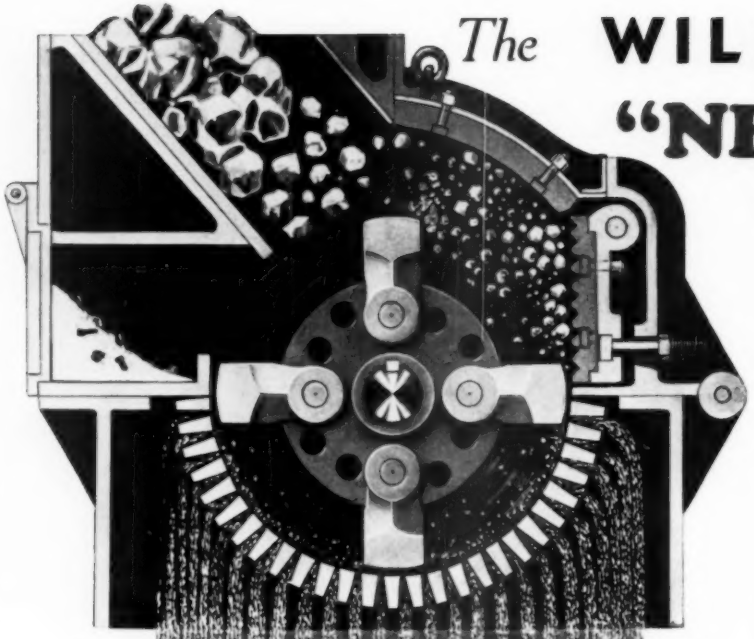
THE INDUSTRY'S RECOGNIZED AUTHORITY

ROCK PRODUCTS

LARGEST PRODUCER CIRCULATION IN THE HISTORY OF THE FIELD

CONVENTION ISSUE

The WILLIAMS "NF" FOR Agricultural Limestone



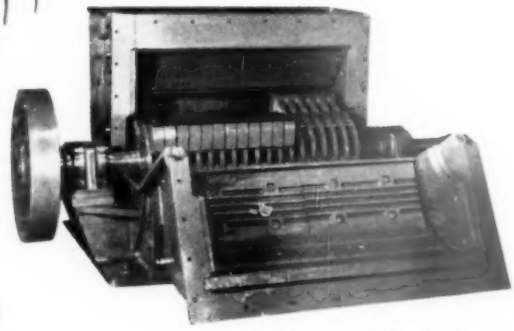
Takes 4" Feed or Smaller

Features of the "NF"

- Larger capacities
- Lifetime construction
- Adjustable grinding plate
- Hammers adjustable to overcome wear
- 2" top liners – 1" side liners
- Hinged cover – easy to work on

• The outstanding [illegible] of the "NF" for producing 4" rock to [illegible] agricultural limestone. Sectional [illegible] shows the Williams "NF" mill with [illegible] for limestone and [illegible] materials. Particular attention is directed to the grinding plate adjustment which [illegible] close contact of hammers and grinding [illegible]

Built in a large [illegible] with capacities from 3 to 75 tons per [illegible]



Open view of "NF" mill showing heavy duty hammers, grinding plates, side liners and cover liners. Also shows easy accessibility to mill for repairs, etc.

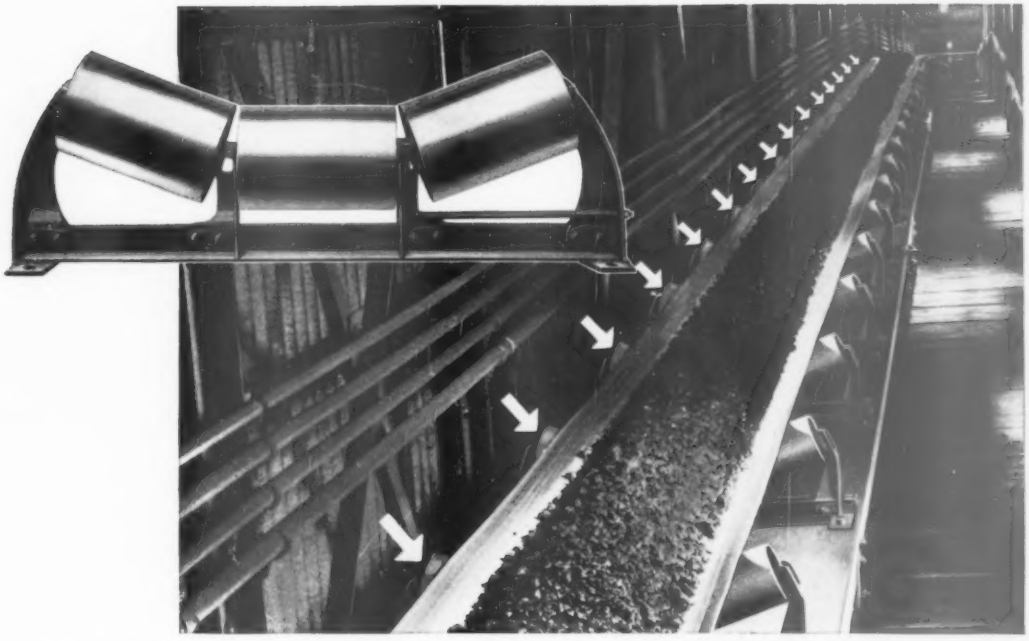
THE WILLIAMS PATENT CRUSHER & PULVERIZER CO.

800 St. Louis Ave. St. Louis 6, Mo.

Williams

OLDEST AND LARGEST BUILDERS OF HAMMERMILLS IN THE WORLD

PATENT CRUSHERS GRINDERS SHREDDERS



Link-Belt Standardized Design Cuts Belt Conveying Costs

In the Link-Belt "100" series belt conveyor idlers, we believe that we have achieved the ultimate in design and performance, with evolution of engineering features progressively since 1896. These features cut conveying costs by reducing maintenance, giving longer service, and permitting the greatest simplification.

In addition to idlers, Link-Belt builds a great variety of standardized design conveyor elements and accessories such as: belt and apron feeders for uniform loading; trippers for intermediate discharge or distribution; drives using gears, reducers and chains; terminal machinery; supporting structures and enclosures.

We are at your service for complete conveyor systems, or individual equipment, to suit your requirements.

LINK-BELT COMPANY

Chicago 9, Philadelphia 40, Pittsburgh 13, Wilkes-Barre, Huntington, W. Va., Atlanta, Dallas 1, Minneapolis 5, Denver 2, Kansas City 6, Mo., Los Angeles 33, San Francisco 24, Cleveland 13, Indianapolis 6, Detroit 4, St. Louis 1, Seattle 4, Vancouver, Toronto 8.

11.213

LINK-BELT

BELT CONVEYOR EQUIPMENT

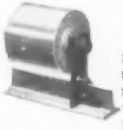
IDLERS • TRIPPERS • BELTS • PULLEYS • BEARINGS • DRIVES

Grease-in—Dirt-out Seal

prevents harmful foreign matter from reaching bearings — conserves lubricant — prolongs bearing life.

Rolls

made with smooth rounded-edge outer shell of uniform thickness, and a full-length steel central tube, both continuous-welded to dished steel heads to form sturdy, well-balanced integral units.



Strong Brackets Support the Rolls

Supporting brackets are tough malleable iron in reinforced T-section to withstand load and impact.

Interlocking Nuts and Yokes Prevent Brackets from Spreading

Impact Idlers with Rubber Treads

Interchangeable with steel rolls this type provides a Cushion at loading points to protect idlers and preserve the belt — A good investment where heavy lump materials are handled.

MARCH, 1949

ROCK PRODUCTS

THE INDUSTRY'S RECOGNIZED AUTHORITY

VOL. 52, No. 3

Bror Nordberg
Editor

Nathan C. Rockwood
Editorial Consultant

This Month

We Hear 55

Editorial — Merchandising Must Carry the Ball in 1949 59

Rocky's Notes — Industry Becoming Co-operative Enterprise 61

Labor Relations Trends 63

The Personal Side of the News 65

Industry News 69

Hints and Helps 72

New Machinery 74

Mechanize Limestone Mine
Conventional room and pillar system is developed for mining limestone on five levels at U. S. Lime Products Corp. operation. Extensive use is made of drag scrapers — *W. B. Lenhart* 78

Sand and Gravel: Employ Three Methods of Recovery
Material obtained by dragline, slackline, and dredge at the three plants of Liverpool Materials Co. — *Harry L. Spooner* 82

An Electrically-fired Kiln
Swiss cement manufacturer experiments with converging electrodes to displace solid fuels — *Louis S. Phillipp, Jr.* 84

Crushed Stone Production in 1949 to Equal 1948 Record Volume
National Crushed Stone Association convention again features open forum meetings for operating men. Blasting, legislation, ballast, research also considered 86

Quarry Sandstone to Process Silica
Sun Sand Co. has adapted western mining practices to silica sand operation. Delivery to plant is via a 4000-ft. tramway 99

Sand-Lime Brick Manufacturers Meet to Talk Shop 101

Quarrying Florida Rock Under Water
Drill blast holes in oölitic limestone under three feet of water with special rig — *W. B. Lenhart* 102

Solution of Problems in Manufacturing Rock Wool
Part three of series of articles on processing problems encountered in the manufacture of rock wool. Discussion of cupola heat balance and fuel ratio — *Victor J. Azbe* 104

Agricultural Limestone Convention
National Agricultural Limestone Association considers markets for 1949 106

Pennsylvania Stone Producers Association Annual Meeting 108

Motor Armature Maintenance — *Paul Ziemke* 109

Wisconsin Block Producers Meet
Annual Convention in Milwaukee considers quality of product and new methods of marketing 135

Merchandising featured by N.C.M.A.
Largest machinery exposition held in connection with convention of concrete masonry manufacturers. Meetings also considered new products, efficiency in production and quality standards 136

Walter B. Lenhart, Associate Editor
David Mocine, Associate Editor
M. K. Smith, Assistant Editor
J. Sedlack, Assistant Editor

Contributing Editors

Victor J. Azbe
Dr. F. O. Anderegg
M. W. Loving
James A. Barr, Jr.

Home Office

Morgan K. Cottingham, Ad. Manager
H. M. Goodenow, Dir. of Circulation
Mary A. Whalen, Circulation Service
M. S. Hendricks, Dir. of Research
C. M. Hancock, Production Manager
C. P. Teats, Field Representative

District Offices

Eastern Area—Richard Y. Fuller, Manager; John F. Lockitt, Assistant, 522 Fifth Ave., New York 18, Tel. Murray Hill 2-7888.

Central Area—R. P. Keine, Manager, Hanna Bldg., Cleveland 15, Tel. Main 4362.

Midwest Area—R. N. Oleson, Representative, 309 W. Jackson Blvd., Chicago 6, Tel. Harrison 7-7890.

Western Area—L. C. Thaon, Manager, 309 West Jackson Blvd., Chicago 6, Tel. Harrison 7-7890.

Pacific Area—Duncan Scott & Co., Mills Bldg., San Francisco 4, Tel. Garfield 1-7950. In Los Angeles 5, 2978 Wilshire Blvd., Tel. Dunkirk 8-4151.

London, England—Harold F. Charles, Managing Director, Maclean-Hunter, Ltd., Sun Life of Canada Bldg., Trafalgar Square, London, S.W.I.

ROCK PRODUCTS is published monthly by MACLEAN-HUNTER Publishing Corporation, 309 West Jackson Blvd., Chicago 6, Illinois; Horace T. Hunter, President; E. R. Cauley, Vice President; J. L. Frazier, Secretary. Copyright, 1949. Entered as second-class matter, Jan. 30, 1936, at the Chicago, Ill. post office under the act of Mar. 3, 1879. Additional entry at Milwaukee, Wis.
ROCK PRODUCTS is indexed regularly by Engineering Index, Inc.

SUBSCRIPTION INFORMATION

Subscription Price: United States and Possessions, Canada one year, $2.00; two years, $3.00; three years, $4.00. Pan American, one year, $4.00; two years, $7.00; three years, $10.00. All other foreign, one year, $6.00; two years, $12.00; three years, $15.00. Twenty-five cents for single copies.
Indexed in the Industrial Arts Index.
Canadian subscriptions and remittances may be sent in Canadian funds to ROCK PRODUCTS, P. O. Box 100, Terminal "A," Toronto, Canada.
To Subscribers—Date on wrapper indicates issue with which your subscription expires...In writing to have address changed, give old as well as new address.

Cut V-belt costs 20 to 50% with new B. F. Goodrich grommet V-belt

Lasts longer, stands shock loads better, costs no more

A NEW patented construction by B. F. Goodrich puts all the cord material in a V-belt to work in the form of twin, endless, extra-flexible grommets — *not* cables — placed close to the driving faces of the belt (see left, above). No "lazy" cords in the interior to shirk their share of the load. Because grommets are endless they are more flexible, with no stiff section such as occurs in an ordinary cable, with spliced or overlapped ends.

Why twin grommet construction? When an ordinary large-sized V-belt (right, above) goes into the sheave its sides are squeezed by the pulley, forcing the center cords downward and out of the line of load-carrying stress. Belt men call this "dishing", because the cord section becomes concave, like a dish. With twin grommet construction there are no center cords, no "dishing" — as the belt goes into the pulley the grommets remain on the job, close to the driving surfaces of the belt.

Grommet belts take shock load better, last longer — Laboratory and field tests show that grommet belts have a higher safety factor, greater ability to withstand shock load, than ordinary V-belts. Reasons: no "lost" or "lazy" cords to shirk, greater flexibility, better gripping power. Grommet belts tested lasted from 20 to 50% longer than ordinary V-belts. Reasons: no cord overlaps (85% of ordinary V-belts fail in the overlapped section), no sawing cords, less heat.

How to get genuine grommet V-belts — Twin grommet construction is an exclusive, patented B. F. Goodrich development — no other manufacturer can make grommet V-belts. Now available in "D" and "E" sections. To be sure you get genuine grommet V-belts see your B. F. Goodrich distributor. *The B. F. Goodrich Company, Industrial Products Division, Akron, Ohio.*

B.F.Goodrich
RUBBER FOR INDUSTRY

W-SPEED PATROL BD-3

BD-2 AD-3 AD-4

Choose the size

FROM ALLIS-CHALMERS' COMPLETE LINE

FOUR DIESEL-POWERED MODELS — all full-fledged construction machines — each one easily handles ditching, sloping, scarifying, black-top mixing, snowplowing, sod removal... as well as maintenance. Differences in weight, speeds, horsepower and cost enable you to match the machine to the job to be done . . . and to your budget.

LOW COST W-SPEED PATROL — long popular as an economical maintainer with townships, cities, counties... and with contractors for keeping up hauling roads and finished sections on their job. Gasoline powered, electric lights and starter, simple-to-operate controls.

Whatever your motor grader needs . . . your Allis-Chalmers dealer can fill 'em!

SAME OUTSTANDING ADVANTAGES ON ALL AD AND BD MODELS

ALLIS-CHALMERS

TRACTOR DIVISION · MILWAUKEE 1, U. S. A.

that fits the job

- A strong, shock-absorbing tubular frame that also protects control rods inside frame.
- High axle and throat clearance for handling bigger windrows without interference.
- Rounded construction of steering knuckles, spindles and drag links to prevent material from packing . . . assures unhindered operation.
- "Roll-away" moldboard that rolls instead of pushes material and thus speeds up work.
- A full circle revolving blade that allows grading forward or in reverse.
- A blade held firmly on its work, through direct down pressure, for precision cutting.
- A smooth-running, economical GM 2-cycle diesel engine that packs power in every stroke.
- Complete operator comfort with full vision, responsive controls, self-energizing brakes.

VERSATILE

FOR ALL KINDS OF USERS
FOR ALL TYPES OF MAINTENANCE

W-SPEED PATROL
31.5 brake hp. • 6,000 lbs.

BD-2 98.5 brake hp. 17,772 lbs.

BD-3 78 brake hp. 19,042 lbs.

INTERNATIONAL Diesels

Deliver the Kilowatts

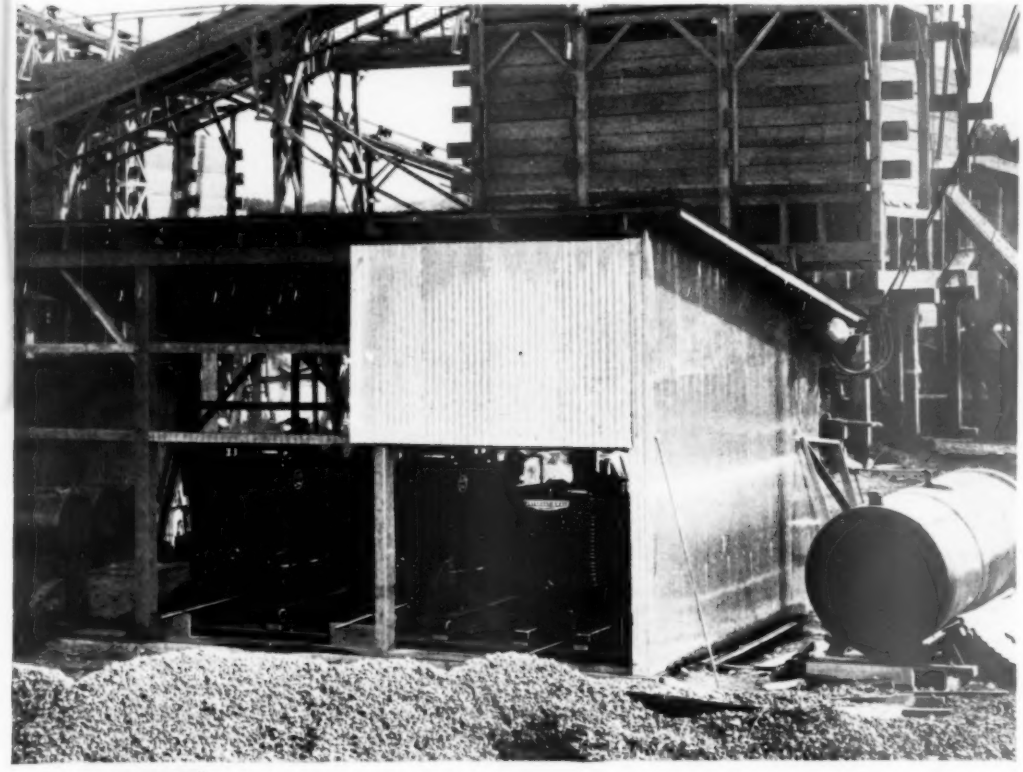
This Diesel-electric set-up furnishes the power to operate a new crusher plant for the Roseburg Sand and Gravel Co., Roseburg, Oregon. Two International UD-24 Diesels plus an International UD-14A spin three generators producing a total of 180 kilowatts of electricity—power to feed 15 motors driving three crushers and five conveyors. The plant capacity is 60 yards of ¾ inch stone per hour.

For steady, reliable power, you can't beat International Diesels. They're always on the job, dependable as daybreak, to keep your costs down.

Check your power requirements for either direct Diesel power or Diesel-electric sets with your International Industrial Power Distributor. He will show you how International Diesels pay off in production.

INTERNATIONAL HARVESTER COMPANY
Chicago

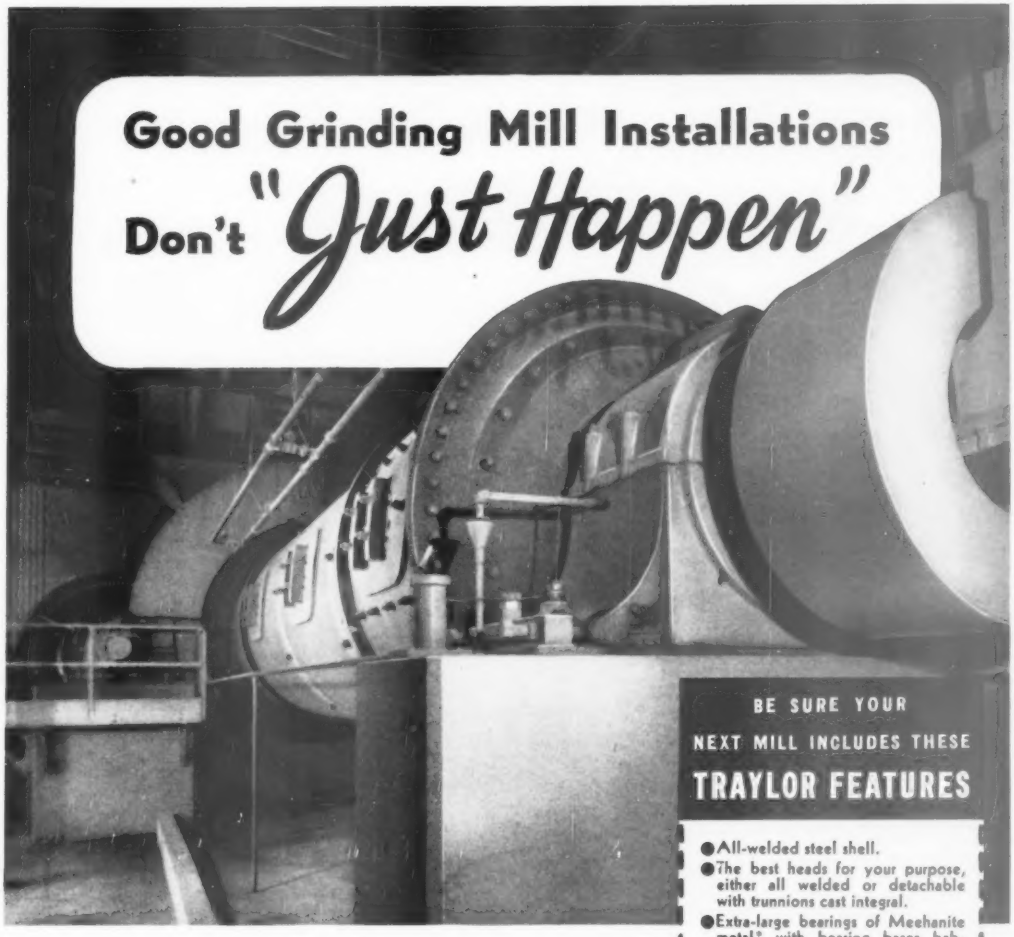
Listen to James Melton on "Harvest of Stars" every Wednesday Evening—CBS



INTERNATIONAL

CRAWLER TRACTORS
WHEEL TRACTORS
DIESEL ENGINES
POWER UNITS

Good Grinding Mill Installations Don't "Just Happen"



More than 45 years of practical experience in making profitable grinding equipment is behind every grinding recommendation made by Traylor engineers. Through the years, Traylor has kept ahead of the industry's ever-increasing need for more efficient grinding. Built into Traylor Grinding Mills are features which permit economies in power requirements and maintenance costs and result in increased tonnage of proper fineness. These features, of which there are many, proven *in the field*, are the reasons for the acknowledged superiority of Traylor Grinding Mills. Choose the type of mill you need; Ball, Rod, Tube or Pebble, but choose a Traylor!

BE SURE YOUR NEXT MILL INCLUDES THESE

TRAYLOR FEATURES

- All-welded steel shell.
- The best heads for your purpose, either all welded or detachable with trunnions cast integral.
- Extra-large bearings of Meehanite metal* with bearing bases babbitted.
- Precision cut steel driving gear, faced and shouldered on both sides.
- Husky, well designed feeder with wear points renewable.
- Liner selected from a complete range which includes Lorain type.
- Choice of flat belt, V belt, direct connected or speed reducer drive.
- Leak-tight manhole covers.

Write for complete details and data today!

TRAYLOR ENGINEERING & MANUFACTURING CO.
122 Mill Street, Allentown, Pa.
Canadian Mfrs: Canadian Vickers, Ltd., Montreal, P. Q.
Sales Offices: New York, N.Y., Chicago, Ill., Los Angeles, Calif.

*Reg. U.S. Pat. Off.

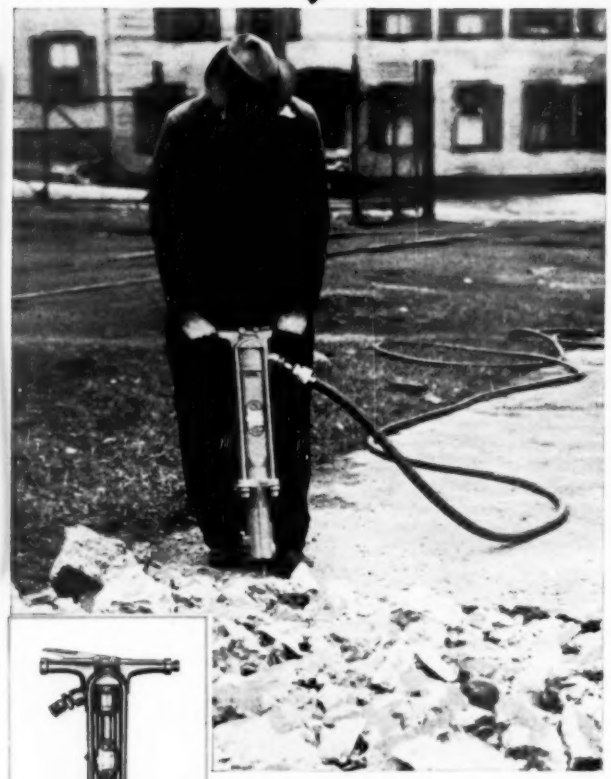
TRAYLOR
GRINDING MILLS
Rotary Kilns . Coolers
Dryers . Jaw Crushers
Gyratory Crushers
Reduction Crushers
Crushing Rolls

A "TRAYLOR" LEADS TO GREATER PROFITS

DO IT FASTER, CHEAPER WITH

JOY PAVING BREAKERS

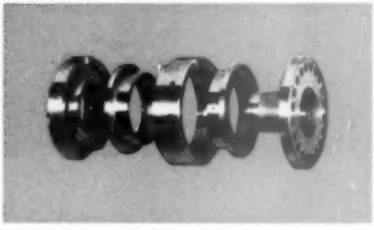
They Hit Hard!



Above: the Joy K-81 Paving Breaker is a rugged tool capable of maximum output on heavy-duty work.

Left: the K-61 Paving Breaker, a powerful, easily-operated tool for all lighter demolition jobs.

JOY "Silver Streak" Paving Breakers can show you real time and cost-saving advantages. They're designed to deliver maximum piston blow, yet with a permanent "cushion" that results in smoother operation—less jarring and operator fatigue—less maintenance and replacement cost. What's more, they're cadmium-plated inside and out—an exclusive JOY feature which makes "running-in" easier and quicker, and protects against deterioration from rusting. ● Write for a bulletin, and ask for an actual demonstration—let us *prove* the superiority of JOY Paving Breakers right on your job.



The Famous JOY "Dual Valve" that makes air do more work.

In JOY Paving Breakers, the exclusive patented "Dual Valve" assures top working efficiency, and air-cushioned smoothness on both up and down strokes of the piston.

Consult a Joy Engineer

WBD C2107

JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING · PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

BUY and SPECIFY
GOODYEAR
— it pays!

Two Tires for Mine and Quarry Service!

ROAD LUG

Engineered for service both OFF and ON the road. It's bodied with tough, heat-resisting rayon cord for super strength and bruise resistance. Extra-heavy tread provides full resistance to cutting and snagging; has alternate long and short bars so it can dig in for traction and still roll long on highways.

HARD ROCK LUG

for off-the-road duty in body-bruising, tread-ripping service. Massive lug bars armor tread and sidewalls against cutting. Extra-thick undertread protects carcass from bruises. Super-strong rayon cord body adds more stamina and long life.

No ONE tire can deliver lowest cost per ton-mile on EVERY kind of mine and quarry haul.

That's why Goodyear builds these *two* great work tires — each a specially designed, special-purpose tire; the Hard Rock Lug for off-the-road duty — the Road Lug for hauls both off AND on paved roads.

You'll find it pays to equip with Goodyear tires that are "right" for *your* needs. Check with your Goodyear man now for his recommendation.

Road Lug—T.M. The Goodyear Tire & Rubber Company

GOODYEAR

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

KOEHRING 605 Dragline
stepped up by keeping cable

SAVES ALL 3

- **Down-Time Cost**
- **Labor Cost**
- **Cable Cost**

You save more than cost of wire rope when you prolong drag-cable life. You eliminate down-time, gain extra yardage. You save man-hours, reduce maintenance overhead. All three, down-time cost, labor cost, cable cost, add up to an important part of your overhead — and Koehring 605 cuts down on all three. Koehring 605 patented fairlead eliminates sharp cable bends. Koehring 605 big diameter drums prolong cable life. Koehring 605 power clutches eliminate sudden shock loading of cable.

Contact your Koehring distributor today for further details on the Koehring 605. 1½ to 2½ yards as dragline, 1½ yard as shovel, 30-ton crane. Koehring also builds the Koehring 205 (½ yard shovel cap.) and the Koehring 304 (¾ yard shovel cap.).

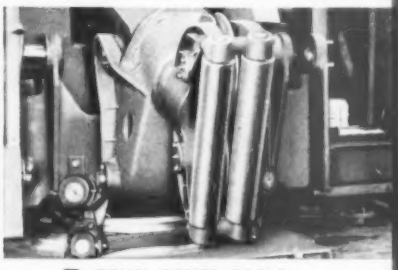
KOEHRING HEAVY DUTY

KOEHRING COMPANY

Profits *cost low*

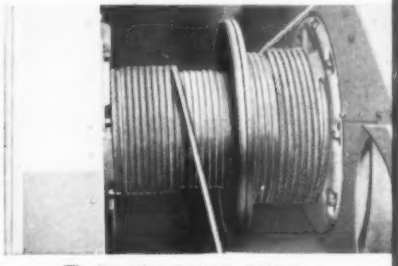
FAIRLEAD SAVES CABLE

With bucket at any angle, Koehring-patented rotating fairlead keeps drag cable running over big 15-inch sheaves. No cable wearing bends. Cable can't jump out.



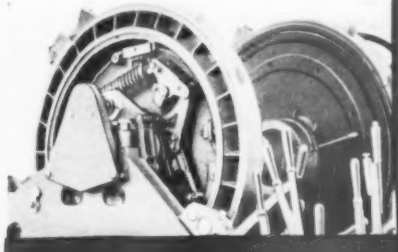
DRUM SAVES CABLE

Slack cable hugs drum grooving because drag cable spools over top of drum. 19-inch drag lagging has large cable capacity. Long lead from fairlead to drum.



CLUTCH SAVES CABLE

Koehring exclusive power clutches prevent shock loading, are easy on cable. You always get smooth engagement without jerking because speed of drum-shaft rotation controls speed of engagement.



MILWAUKEE 10, WISCONSIN

Johnson

EXTRA TONNAGE at NO EXTRA COST

FASTER OPERATION

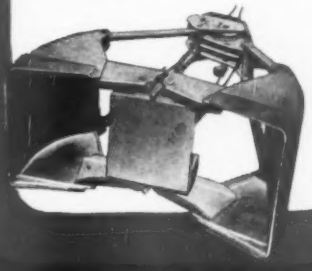
Large diameter sheaves, with fully sealed needle bearings, reduce friction power loss, deliver full power to cutting lips to provide faster, smoother operation.

BIGGER LOADS

Because all-welded construction improves bucket balance and lowers center of gravity, Johnson bucket teeth dig in straight and deep. Deep, big bites get capacity load every time, in any material.

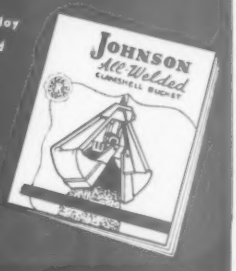
LONGER LIFE

Stronger and longer-lived because all-welded construction, by saving weight on other parts, permits use of heavier lips, heavier sides, heavier bottoms. Protector plate below lower sheaves keeps sheaves clean, prolongs sheave life. Hard manganese cutting edge, welded to heavy lips, actually gets tougher with use.



¼ to 2½ yard sizes. General Purpose, Wide Rehandling and Heavy-duty Digging Type.

Write today for illustrated catalog.



THE C. S. JOHNSON COMPANY

KOEHRING SUBSIDIARY CHAMPAIGN, ILLINOIS

Garrison Dam, under construction on the Missouri River near Garrison, North Dakota, will be the world's largest rolled-fill earth dam. When completed, the dam will be 210 feet high and over 2 miles long with a base width of nearly half a mile—a total fill of more than 70,000,000 cu. yds.

A load a

WITH GM

Euclid Bottom Dump, powered by GM Series 71 Diesel, dropping a load of fill dirt. Eight of these units, working with a 8V Loader, hauled 631 such loads in a 10½ hour working day, an average of one load a minute. Haulage distance at this stage was about 500 yards.

ON the world's largest rolled-fill earth dam near Garrison, North Dakota, records for moving dirt are being smashed every day.

Bulk of the heavy equipment on the Garrison Dam project is powered by General Motors Series 71 Diesel engines. GM Diesels were selected for this job because–as the contractor puts it–"They can move dirt faster."

Reasons for this superior performance are obvious. GM Diesel engines are

Garrison Builders, Inc., operators of this equipment, are working on the 14 million yard stage-one contract on the west side of the river. Shown is a convoy of four Euclid Bottom Dumps approaching the embankment fill area.

minute...

DIESEL POWER

2-cycle—with power on every piston downstroke. They deliver a smooth, steady power output—twice as many power impulses for each revolution of the crankshaft. This added power-per-turn makes them more compact with more horsepower for their size than other type engines. They start instantly on their own fuel. Their simplified construction and clean design make maintenance much easier. Service problems are greatly simplified by the interchangeability of parts.

Add up these advantages and you'll see why General Motors Diesels are the first choice of construction men for any heavy-duty operation. Let us show you how these engines can bring greater efficiency and economy to your particular job. See your local equipment distributor or write direct to us.

GM
GENERAL MOTORS
DIESEL POWER

DIESEL BRAWN WITHOUT THE BULK

DETROIT DIESEL ENGINE DIVISION

SINGLE ENGINES... *Up to 200 H.P.* **DETROIT 28, MICHIGAN** MULTIPLE UNITS... *Up to 800 H.P.*

Why some men make

IN TEXAS. Tom Popplewell, president of the Panhandle Gravel Co. at Amarillo, reports this Pioneer plant produces 125 yards of sized, washed material an hour. Pioneer equipment—a 1536 Jaw, a 40x22 Roll, a 4x12 Vibrating Screen, 48" Revolving Screen, 30" Feeder and Conveyors.

IN INDIANA. The Pipe Creek Stone Company located just outside of Sweetzer produced 100-125 tons of rock an hour with its Pioneer plant. A new Pioneer Jaw Crusher recently installed will reduce oversize . . . help produce more "pay" material.

IN WISCONSIN. Baraboo Concrete Products Company at Baraboo is getting 350 to 400 yards of clean sand and 110 to 200 yards of washed sized gravel a day with its Pioneer 305-W Washing Plant. This is their second Pioneer Washing Plant.

IN TENNESSEE. In seven months Charlie Langford's Pioneer plant at Cookeville produced over 250,000 tons of road aggregate and ag-lime. His other Pioneer plant located at Gallatin has produced over a quarter-million tons of aggregate and ag-lime in one year.

IN CALIFORNIA. Livingston Truck and Materials Co., near San Pedro, produces 300 tons of 1" minus granite an hour. Included in this big plant is a Pioneer 54 x 24 Roll Crusher, a 40 x 22 Roll Crusher, and a Pioneer 3042 Jaw Crusher.

IN ARKANSAS. The Bee Rock Quarry is producing specification rock for road construction at a 120 ton per hour clip. Pioneer equipment includes an Apron Feeder, 2036 Jaw Crusher, 40 x 22 Roll, 4' x 12' three deck Vibrating Screen, Conveyors and Storage Bins.

more money than others

IN OKLAHOMA. Mittry Brothers supply the big Hulah Dam Project with four sizes of washed specification material and sand. Pioneer Equipment includes an Apron Feeder, Jaw Crusher, Vibrating Screens, Triple Roll Crusher, Dehydrator, Bucket Elevator, Revolving Scrubber, and Storage Bins. Of course, all Conveyors were furnished by Pioneer.

BEHIND each one of these gravel and quarry plants, there's a very successful man . . . a man who has to be shown before he buys equipment.

In this space, we can show only seven such plants, owned by seven such men. But there are scores of others —in every part of the United States, in Mexico, Brazil, South Africa, Greece, the Philippines . . . all over the globe.

Why has PIONEER equipment won this world-wide acceptance and the "repeat orders" which prove its performance on the job? Because it *delivers*. PIONEER equipment is rugged, dependable, engineered for high production with minimum upkeep. That's why so many PIONEER plants dot the landscape.

As the leading designers and manufacturers of stationary quarry, gravel and washing plants, PIONEER engineers are extremely well qualified by years of experience to help you meet competition . . . produce material at the lowest possible cost.

If you're a man who'd like to improve his competitive position . . . who is tired of costly breakdowns, we'd like to tell you about the newest features of PIONEER plants. Just mail the coupon below, and we'll mail catalogs and literature.

PIONEER ENGINEERING WORKS
1515 Central Avenue • Minneapolis 13, Minnesota

BUY BOTH!

Higher Output, Lower Upkeep!

Pioneer

Continuflo **EQUIPMENT**

Pioneer Engineering Works
1515 Central Avenue, Minneapolis 13, Minnesota

● Please send me information on the products checked below:

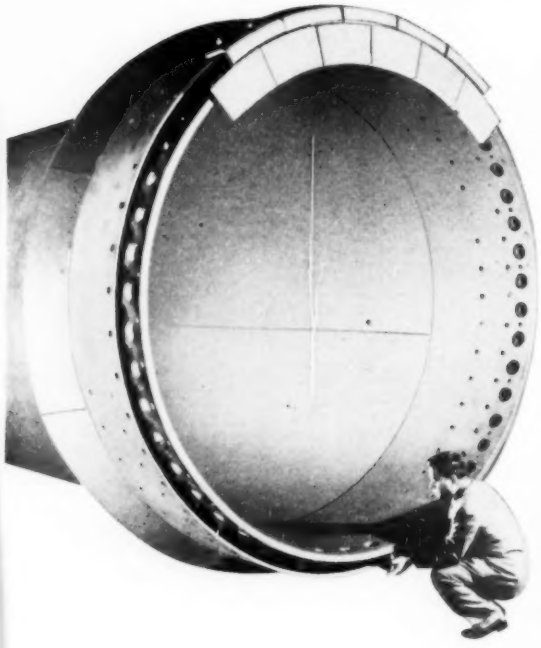
- ☐ Gravel plant
- ☐ Quarry plants
- ☐ Washing plants
- ☐ Conveyors
- ☐ Feeders
- ☐ Jaw Crushers
- ☐ Roll Crushers
- ☐ Vibrating Screens

*Name*_____

*Address*_____

*City*_____ *State*_____

Looking for Increased Kiln Production?

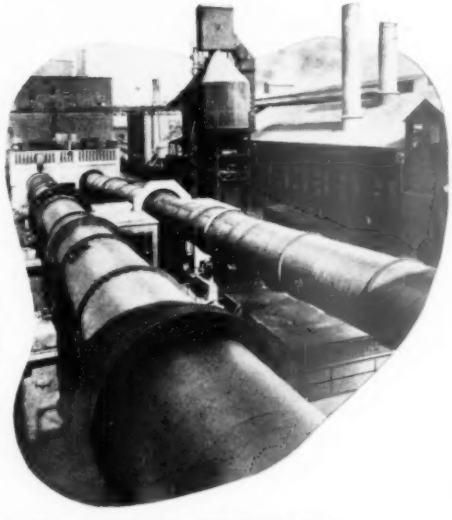


CHECK THESE CONSTRUCTION FACTS

This modern air-cooled kiln end is only one of many Allis-Chalmers advances in *rotary kiln* engineering that help increase capacity and boost your profits.

The cooled, segmental alloy steel brick retaining ring resists highest temperatures, prevents shell warpage and refractory troubles. Longer kiln and refractory life . . . less down-time . . . more production!

Other Allis-Chalmers developments that make *rotary kiln* operation more profitable: modern heat recuperation equipment . . . centralized control of combustion . . . constant delivery feeders. Heavy, all-welded Allis-Chalmers kiln shells (extra thick under riding rings) prevent distortion, reduce deflection.



AND THESE PERFORMANCE FACTS

You can be sure of top production and economy when you call on Allis-Chalmers for rotary kiln recommendations. A-C has built hundreds of kilns — has had over fifty years experience in engineering complete rotary kiln installations. Every new kiln recommendation is based on this invaluable backlog of experience plus a thorough analysis of your specific requirements. A-C laboratory testing and shop facilities are unexcelled. For more information, get in touch with the A-C representative in your area or send for **Bulletin 07B6368.**

ALLIS-CHALMERS, 975A SO. 70 ST.
MILWAUKEE, WIS.

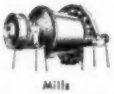
A 2333

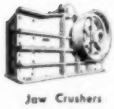
ALLIS-CHALMERS

Gyratory Crushers

Hoists

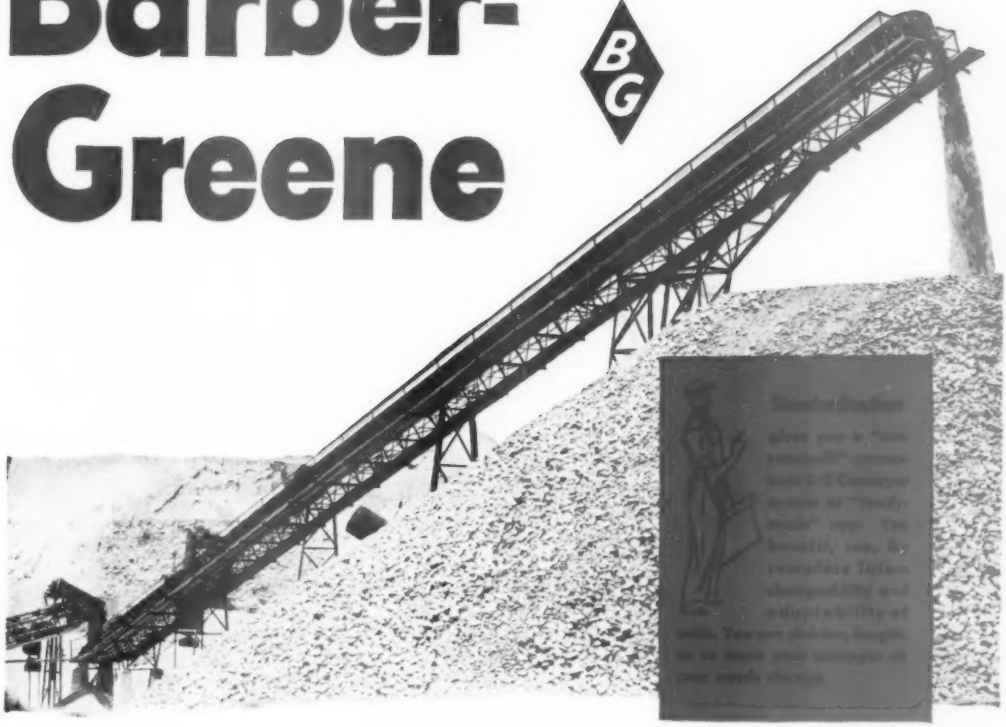
Vibrating Screens


Mills


Jaw Crushers

. . . and Other Equipment for the Crushing, Cement and Mining Industries

Barber-Greene



less "blueprint work" easier assembly with standardized conveyors . . . .

It's easier to select the right B-G Conveyor for your particular job—and easier to install it. That's because B-G Conveyors are *pre-engineered* and built of simple *standard* units.

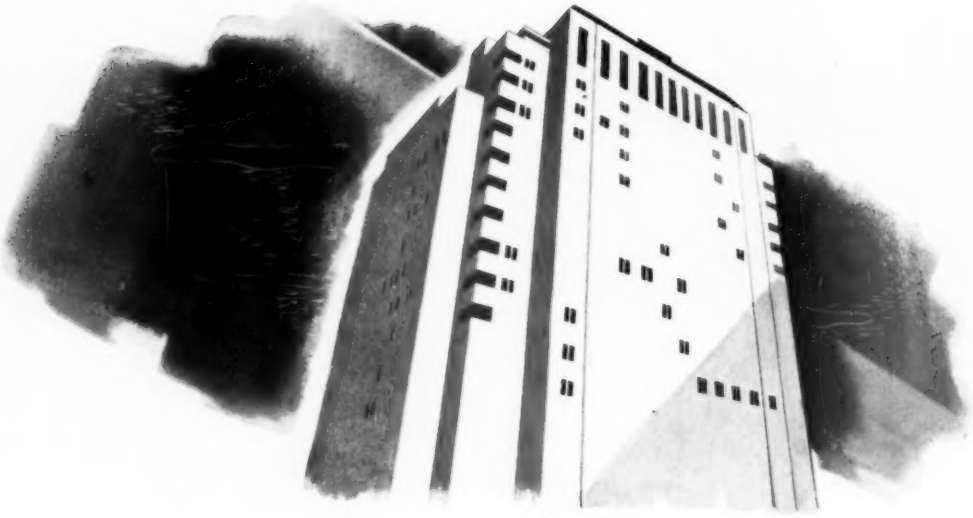
Erection is little more than a matter of bolting the *standardized* units together. Frames and terminals are *pre-fabricated* . . . delivered to you, clearly marked, as complete, self-contained units. Drives and take-ups are factory-assembled, checked, tested and rated for load. B-G *pre-engineering* assures proper alignment and smooth, dependable operation on the job. What's more, you have a wide choice of equipment in the sizes and types that best meet your requirements.

Here's a "packaged" plan that may well provide the practical solution to one or more of your haulage problems. Why not call on our engineers to help you work out an efficient, economical system?

BARBER · GREENE COMPANY, AURORA, ILLINOIS

Constant Flow Equipment

LOADERS PERMANENT CONVEYORS PORTABLE CONVEYORS COAL MACHINES BITUMINOUS PLANTS FINISHERS DITCHERS



A Monument to Finer Living...

Glenn McCarthy

. . . oil wildcatter, sportsman, airman . . . head of 16 corporations and organizations, member of 14 more . . . oilman builder of McCarthy Center (1100-room hotel, 1200-car garage, 1750-seat theater, swimming pool, exhibition hall).

In the priceless book of man's memory there shines in illuminated lettering the magic word, "Hospitality." As a city of importance, Houston ranks peak-high on the scale . . . as a city of hospitality, Houston reigns among the nation's friendliest.

And now may we present The Shamrock . . . hotel spectacular . . . symbol of hospitality in one of America's most hospitable cities. From its very beginning this was no ordinary hotel, for wound inextricably in the substances of its creation are the ambitious materials of a young man's dream.

Yes, native Texan Glenn McCarthy fulfilled a dream for Houston, built for Houston a magnificent structure of stone and steel as a small measure of esteem for the bounties the city . . . and the state . . . had tendered him through hard years of striving.

And so you see The Shamrock, Glenn McCarthy's contribution to Houston and to finer living . . . rising tall above Lone Star plains as a great monument to warm hospitality.

The eyes of Texas and of the entire nation are on Houston's . . . The Shamrock.

GRAND OPENING • ST. PATRICK'S DAY • MARCH 17, 1949

In Houston, you are cordially invited to live at

The Shamrock

A GLENN McCARTHY ENTERPRISE

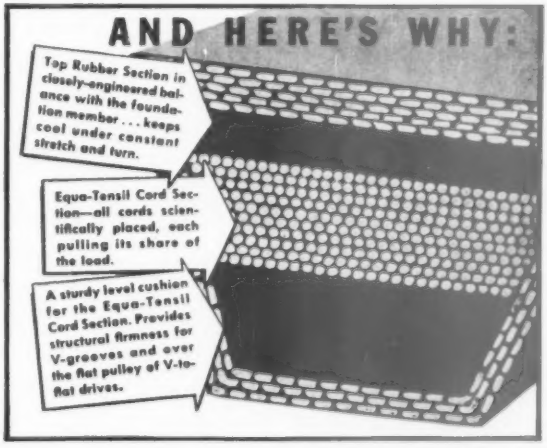
COMPLETE CONVENTION FACILITIES AVAILABLE—TELETYPE No. HO 192

PLENTY PULL GREAT SHOCK-RESISTANCE

Every cord in U. S. Rainbow Multiple V-Belts pulls its own share of the load, absorbs shocks smoothly and exerts great tensile strength under heavy burdens.

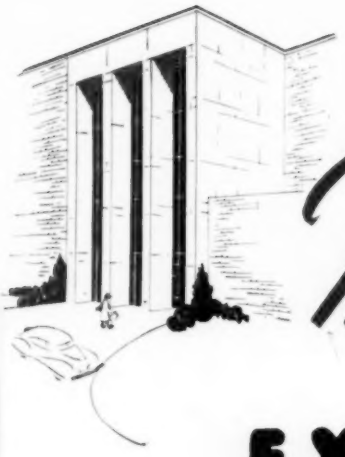
These cords all work together because they are concentrated in a single scientifically-designed unit known as the "EQUA-TENSIL CORD SECTION." Even more pulling power is gained by means of straight sidewalls, which grip the grooves for complete contact the full height of the belt. Protective jackets increase the grip while keeping out dirt and prolonging wear.

Rainbow V-Belts are interchangeable with all other standard makes. Lengths are matched for multiple use. Available through U. S. Rubber equipment distributors in the nation's principal trading centers. For more information write to Mechanical Goods Division, United States Rubber Company, Rockefeller Center, New York 20, N. Y.


AND HERE'S WHY:
Top Rubber Section in closely-engineered balance with the foundation member . . . keeps cool under constant stretch and turn.
Equa-Tensil Cord Section—all cords scientifically placed, each pulling its share of the load.
A sturdy level cushion for the Equa-Tensil Cord Section. Provides structural firmness for V-grooves and over the flat pulley of V-to-flat drives.

U.S.
RAINBOW V-BELTS
WITH EQUA-TENSIL CORD SECTION

A PRODUCT OF
U.S.RUBBER
SERVING THROUGH SCIENCE
UNITED STATES RUBBER COMPANY



Maclean-Hunter

EXPANDS

A great publishing organization creates a great new printing plant

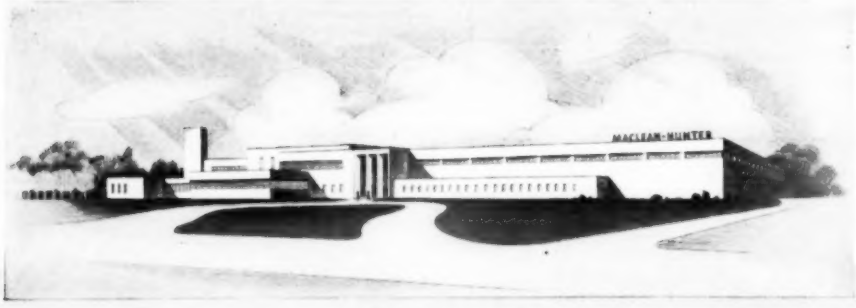
Probably the most modern in the world is this magnificent new plant of Maclean-Hunter. There was one publication 60 years ago. Its circulation was less than 2,000. Today there are 37 Maclean-Hunter publications in three countries—Canada, U. S. and U. K.

The new plant in Toronto is the production centre for Maclean-Hunter publications in Canada, which include that nation's leading national magazines and business newspapers.

Built on a 44-acre site it has over 200,000 square feet of floor space. It is equipped with the finest presses and other equipment available. It will produce better quality printing in greater quantity, and faster than any other plant ever built in Canada.

To Maclean-Hunter advertisers in three countries, this new plant is a symbol of strength and leadership. Strength derived from sound and aggressive editorial service. Leadership that presents an ever-recurring challenge to do a better job for the advertiser every day.

ROCK PRODUCTS is a MACLEAN-HUNTER PUBLICATION

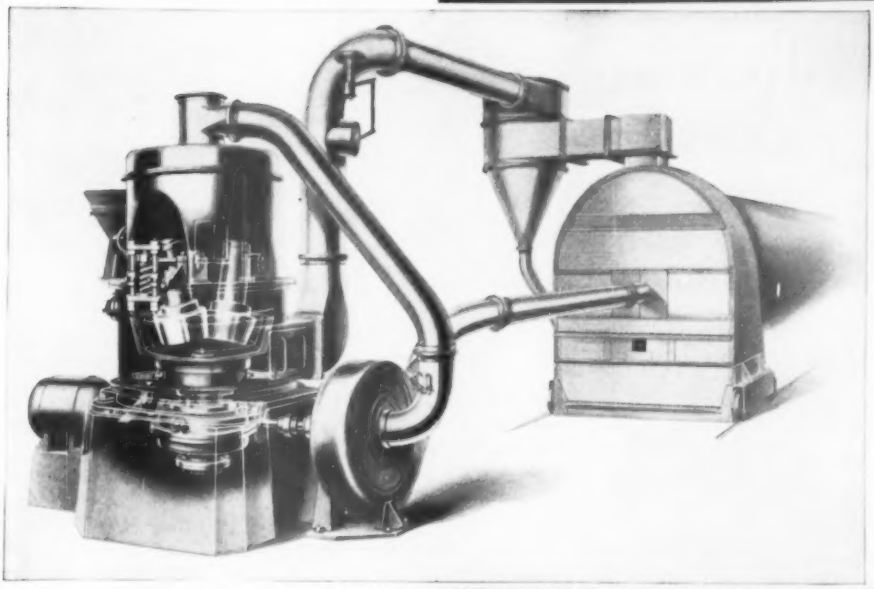


MACLEAN-HUNTER
Publishing Company Limited, Toronto — Montreal

MACLEAN-HUNTER
Publishing Corporation, Chicago — New York

MACLEAN-HUNTER
Limited, London, England

Get ready for FUEL EMERGENCIES



with RAYMOND BOWL MILL FIRING

ADAPTABLE

for handling coal of any grade, grindability or moisture content.

DEPENDABLE

for continuous non-stop operations for months at a time without shutdowns.

ECONOMICAL

Low power consumption per ton of coal pulverized and low operating costs in production of cement or lime.

COAL is a basic fuel . . . and when pulverized in the Raymond Bowl Mill and direct-fired to your rotary kiln . . . you have a dependable and efficient powdered fuel system that will give continuous service with consistent, low operating costs.

Performance records on well over a thousand installations prove the superiority of the Bowl Mill in ease of control, economy of operation and maintenance, ability to handle high temperature air for drying, positive lubrication and quiet, vibrationless operation.

If you are planning to build new kilns or to modernize the old ones, write for full information on the advantages of Bowl Mill firing.

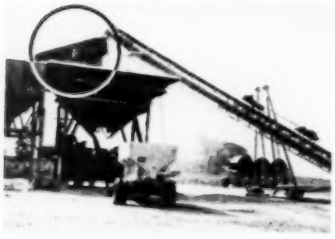
Combustion Engineering - Superheater, Inc.
Raymond Pulverizer Division
1307 North Branch Street, Chicago 22, Ill.
Sales Offices in Principal Cities
Canadian Office: Montreal

Judge Screening Results this way

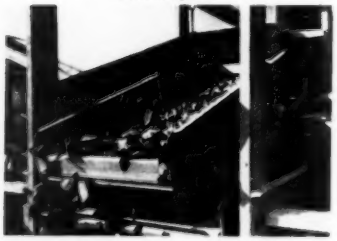
1 ACCURATE SIZING
2 HIGH PRODUCTION
3 LOW MAINTENANCE

Get all 3 with SECO

THE ONLY VIBRATING SCREENS WITH FULLY CONTROLLED TRUE CIRCULAR ACTION



Rocky Ford Limestone
Lincoln, Ill.



Dolomite Products, Corp.
Rochester, N. Y.

B. V. Hedrick Gravel and Sand Co.
Lilesville, N. C.

Accurate Sizing

Whether you screen ag-lime or rip rap .. whether you are making two or up to five sizes . . . you'll get accurate sizing with a Seco vibrating screen because Seco's fully controlled true circular action produces a sharp whip that drives materials thoroughly and accurately through the meshes. Only Seco offers the benefits of the patented Equalizer Assembly shown in the cutaway above.

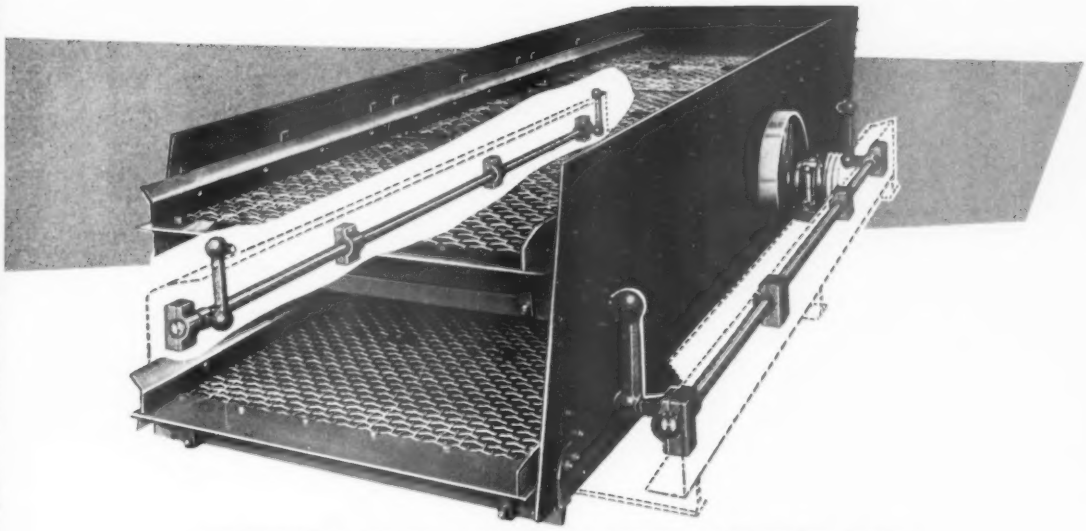
High Production

Because Seco's fully controlled true circular action sets up a sharp whip that extends to every part of the screening surface . . . materials move quickly through the meshes. At the same time, Seco's excellent conveying action quickly carries over any oversize material that may be on the screen. With a Seco there's no bobbing, or weaving . . . no pyramiding of the load to slow down production.

Low Maintenance

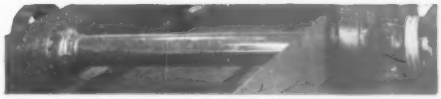
Smooth operating Seco vibrating screens can really take it! The excellent year after year performance records of these screens on all types of screening assignments prove their ability to save not only repair costs . . . but also valuable production hours. Some Seco vibrating screens have been in continuous operation for 12 years.

SECO for screening sand, gravel, ag-lime..all aggregates

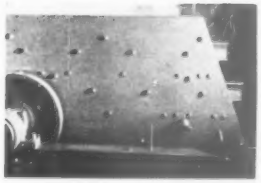


ENGINEERED TO DO THE JOB RIGHT!

Shaft and Bearings Completely Protected. The eccentric shafts in Seco vibrating screens are made of a special formula, high tensile steel and are mounted on four double spherical roller bearings. Heavy cast steel housings, seamless steel tubing and efficient labyrinth grease seals protect these precision moving parts from dirt and damage.



Shaft Set at Horizontal Center of Gravity. In addition to controlling the true circular action with the patented Equalizer Assembly, Seco engineers further assure smooth operation by locating the shaft at the true horizontal center of gravity of each particular model built. (Note unretouched photo of 3-1/2 deck Type S turning at 1050 R.P.M. The washer and pencil on the base are unshaken.)



Vibrating Screen Specialists. Every step in the design and manfacture of Seco vibrating screens is done in our own modern factory... where our entire staff of designers and engineers devote their efforts to vibrating screens exclusively. Thus, your screening problem will get the individual attention it deserves. We invite you to join with many other operators who are enjoying the benefits of profitable screening with a Seco vibrating Screen. Send your problem to us today or write for Catalog #203.

SECO SCREEN EQUIPMENT CO., INC.

1750 WALDEN AVENUE, BUFFALO 21, N.Y.

In Canada: United Steel Corp., Ltd., Toronto

Norblo

Outstanding in Efficiency and Adaptability for Industrial Dusts Control

Wherever continuous high recovery of industrial dusts and fumes is important for salvage or good housekeeping Norblo Automatic Bag Type Dust Collection has many design advantages. The Norblo automatic shaking and cleaning cycle is adjustable for dust loading and type of dust. Any one section can be cut out for inspection or bag replacement without seriously reducing the capacity of the unit . . . Norblo Automatic Bag Type Collectors, in nearly all situations, collect most dust for a given cost of power and maintenance. Norblo equipment also includes standard bag type, centrifugal and hydraulic dust collectors . . . If you have a dust problem, consult Norblo too. Or write for bulletins.

The Northern Blower Company

6408 Barberton Ave. • Cleveland 2, Ohio

Automatic and Standard Bag Type Fume and Dust Collectors, Norblo Centrifugal and Hydraulic Collectors, Exhaust Fans.

Born to the Service!
EASTON MODEL TRB
QUARRY TRAILERS
A natural favorite in quarries throughout the world. Model TRB-10, illustrated, is rated at 14 tons capacity. Other TRB capacities up to 20 tons. Dumped by EASTON air or electric overhead hoist. Built for years of heavy duty.
DOORLESS • TWO-WAY • SIDE-DUMP
EASTON

Consider the LOW COST!

Special purpose design strips cost to the essentials for specialized service. That's why haulage costs are so extremely low with EASTON Special Purpose Trailers. Engineers who know quarry haulage intimately will gladly provide full information, transportation survey and cost estimates on an EASTON Trailer system for your property. Write to Easton Car & Construction Company of Easton, Pa.

B-1032

PATENTED
DOORLESS PAN

Model TRB · 14 to 20 tons

PATENTED
LIFT DOOR

Model TL · 20 to 30 tons

PATENTED
DROP DOOR

Model TD · 20 to 30 tons

SPECIAL PURPOSE
EASTON
Trailers

Makers of Easton Mine and Quarry Cars and Easton Heavy-Duty Truck Bodies

Reduction crushing is done by these three Symons Cones.

3 MORE Symons Cones

For Superior Stone Company's, Red Hill, Virginia, Aggregate Plant.

Superior Stone Company plant at Red Hill, Virginia.

WHEN the Superior Stone Company of Raleigh modernized its Red Hill, Virginia, plant, and increased the output to 350 tons per hour, Symons Cone Crushers were again selected for secondary crushing. Here is another instance where a user with over 20 years' experience with Symons Cones continues to install these crushers in its plants. Since 1928, when Superior Stone installed its first Symons Cone, a total of twelve have been placed in service by this progressive producer of crushed materials. Their cone crushers include 2, 3, 4, 4¼ and 5½ foot sizes in both Standard and Short Head types.

Should your operations call for fine reduction crushing, follow the example of so many of the leading producers of crushed materials who continue to install Symons Cones for new and expanded operations. Available in Standard, Short Head and Intermediate types and a wide range of sizes meets all demands for fine crushing.

NORDBERG MFG. CO.
MILWAUKEE 7, WISCONSIN
NEW YORK · SAN FRANCISCO · WASHINGTON · SPOKANE
MEXICO, D. F. · LONDON · TORONTO · JOHANNESBURG

C349

NORDBERG

Machinery for processing ores and industrial minerals

Gyratory and Jaw Crushers

Symons Cone Crushers

Vibrating Screens and Grizzlies

Grinding Mills

Diesel Engines

STRONGER! TOUGHER! for MORE YARDAGE— Firestone TIRES

WHICH tires move the most yardage . . . stay on the job longest . . . with the least downtime? The answer is Firestone.

Off-the-Highway tires were pioneered by Firestone. They have held leadership ever since only because they are built stronger, they are built tougher, they are built to stand up on the job, and save you money.

Any Firestone Dealer or Firestone Store can prove these facts. He will be glad to show you on your own equipment on any job.

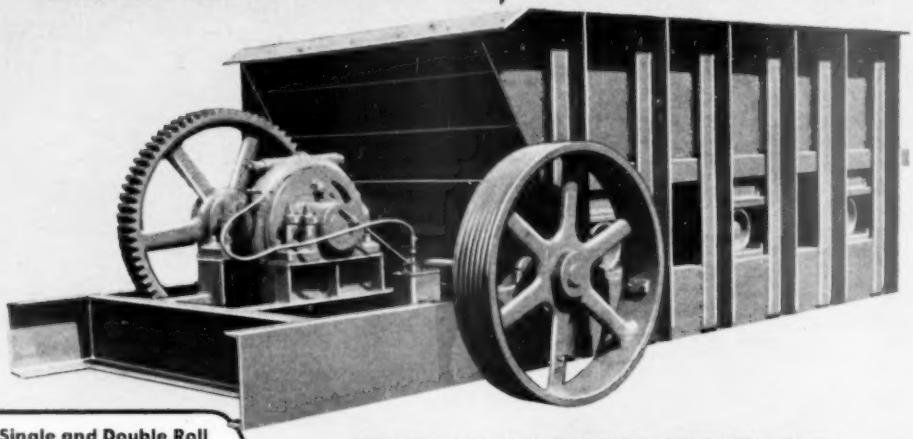
Listen to the Voice of Firestone every Monday evening over NBC

Copyright, 1949, The Firestone Tire & Rubber Co.

FIRESTONE OFF-THE-HIGHWAY TIRES

For Economy in handling TONNAGE...

from the size of SAND TO shovel loaded ROCK



- Single and Double Roll Crushers (Primary and Secondary)
- Heavy Duty Rock Crushers — Automatic Steelstrut Toggle, Quick Adjustment and Pioneer series
- Double Roll Fabricated Steel Crushers
- Jaw Crushers
- Portable and Semi-Portable Crushing Plants
- Dry Pans Super Heavy Duty
- Conveyors
- Dryers of Revolving Type
- Elevators
- Feeders
- Hoists
- Ore Jigs
- Screens
- Washers & Scrubbers
- Special Machinery and Complete Plants

McLANAHAN

HEAVY DUTY

RECIPROCATING PLATE FEEDERS

Heavy duty McLanahan Reciprocating Plate Feeders are quickly adaptable to the producing capacity of any machine. These self-contained feeders *automatically control the flow of all kinds of materials,* from sand to shovel rock. Special design protects the bottom plate and pan, so the hopper may be completely filled without danger. Although rugged in construction, they require surprisingly little power. Through *increased production and lowered overhead,* McLanahan Reciprocating Plate Feeders easily pay for themselves in a short time. Write for descriptive bulletin.

Headquarters for Pit, Mine and Quarry *Modernization*

McLANAHAN and STONE Corp.

HOLLIDAYSBURG, PA.

Since 1835

the P&H's are Teaming Up!

P&H Model 1400 (4 cu. yds.) owned by the Shen-Penn Production Company at Shenandoah, Pa.

A new P&H 1600 (6 cu. yds.) teams up at Shen-Penn in the strip mining of anthracite coal.

In one location after another owners are reordering P&H Electric Shovels to gain important new operating advantages... For example: P&H's independent propel drive. Change from dig to propel is made instantly by merely flicking the master propel switch . . . there are no mechanical complications of transferring of power from one shovel function to another . . . no sliding gears or mechanical clutches . . . no gear shifting. Faster, easier move-ups with P&H's independent propel machinery mean less trouble, less time wasted. The machine keeps in more efficient digging position . . . cuts tonnage costs. Along with Magnetorque drive, it's another important P&H *added value.*

Every third P&H Electric Shovel sold is a repeat order

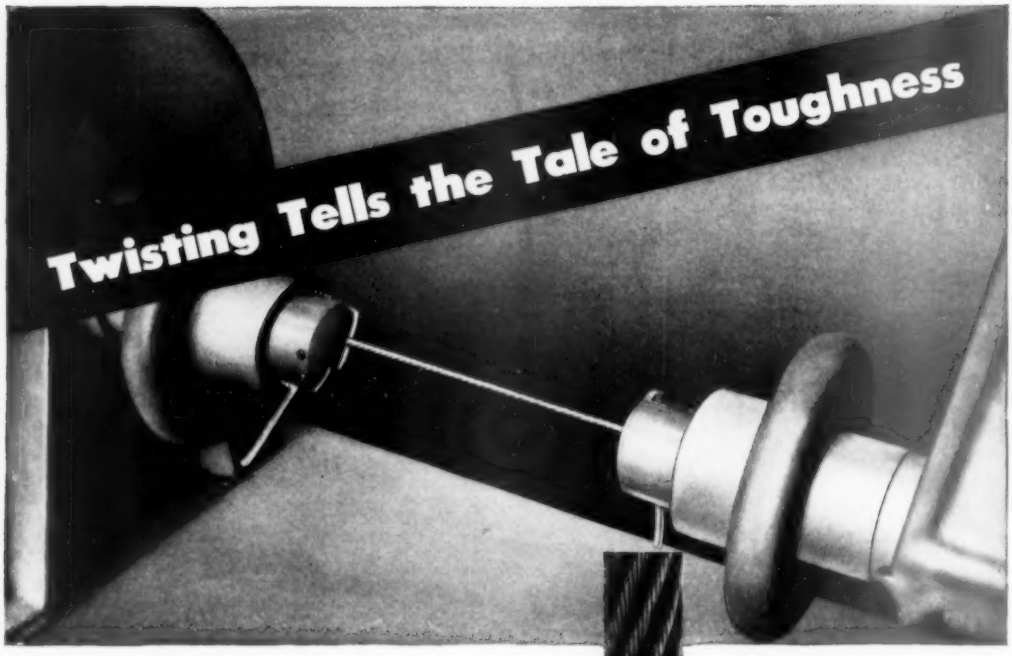
P&H

ELECTRIC SHOVELS

4465 West National Ave.
Milwaukee 14, Wis.

HARNISCHFEGER CORPORATION

LEADING THE FIELD IN ELECTRIC SHOVEL DEVELOPMENTS



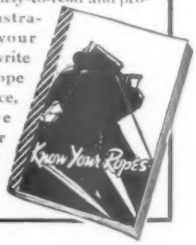
Here we see an 8" piece of rope wire being twisted on its own axis. The revolutions necessary to break the wire are counted and only those coils are accepted which test at least 10% above American Petroleum Institute specifications for wire rope. In addition to being an indication for toughness, the torsion test reveals whether the wire is free from steel defects such as seams and cups.

A routine test? Yes, but with higher standards. And every coil of wire on both ends must pass this and countless other tough tests before acceptance for use in making Wickwire Rope. It's these tests, coupled with over 125 years of wire-working know-how, that are your assurance of the utmost in performance, safety and long rope life when you use Wickwire Rope.

Wickwire Distributors and Wire Rope engineers throughout the country are ready to help solve your wire rope problems, and to provide prompt delivery of the rope you need from strategically located warehouse stocks. Wickwire Rope is available in all sizes and constructions, both regular lay and WISSCOLAY *Pre*formed.

THIS 82-PAGE BOOK ON WIRE ROPE IS FREE. WRITE FOR YOUR COPY TODAY!

Thousands of wire rope users have found that the information packed in the pages of "Know Your Ropes" has made their work easier. It's full of suggestions on proper selection, application and usage of wire rope. It's easy-to-read and profusely illustrated. For your free copy, write Wire Rope Sales Office, Wickwire Spencer Steel, Palmer, Mass.



WICKWIRE ROPE

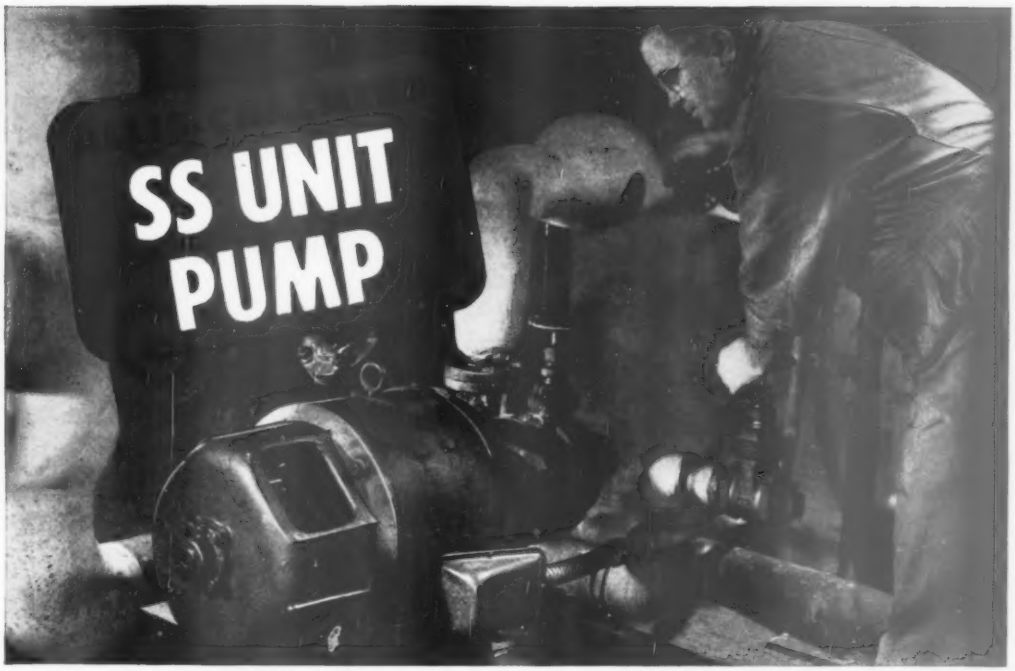
CF&I & SUBSIDIARIES

A PRODUCT OF THE WICKWIRE SPENCER STEEL DIVISION OF THE COLORADO FUEL AND IRON CORPORATION

WIRE ROPE SALES OFFICE AND PLANT—Palmer, Mass. **EXECUTIVE OFFICE**—500 Fifth Avenue, New York 18, N. Y.

SALES OFFICES—Abilene (Tex.) • Boston • Buffalo • Chattanooga • Chicago • Denver • Detroit • Emlenton (Pa.) • Fort Worth • Houston • New York • Philadelphia • Tulsa

PACIFIC COAST SUBSIDIARY—The California Wire Cloth Corporation, Oakland 6, California



50% MORE LIQUID
33% LESS POWER

User Reports: *Previous* displacement pump required 15 hp motor for 100 gpm capacity at 110 ft head. *Now* Allis-Chalmers SS Unit Pump with only 10 hp motor delivers 150 gpm at same head!

IN ADDITION, this same user reports savings in space and maintenance.

Paper, Petroleum, Mining, Chemical — in *any* industry, Allis-Chalmers SS Unit Pumps can be used for circulating, gathering, water supply, drainage, etc.

Check these 4 features: —

Deliver Rated Efficiencies — Every unit tested at the factory and the performance curve plotted. Efficiency is proved.

Heavy Construction — Compare section thicknesses, shaft diameters and other features. See why SS Unit Pumps run years without repairs.

Easy Maintenance — Compact design and few parts reduce maintenance. Bronze ring protects casing from wear. Is easily replaced when required.

Application Engineering — When a pump is recommended by an A-C Pump Application Engineer, you know that you are getting the pump that fits your needs exactly and that will give you dependable service at low cost per gallon.

SS Unit is one of many Allis-Chalmers models for most industrial pumping services. For information, see your Allis-Chalmers Authorized Dealer or District Office. Or write for Bulletin 52B6059E. Also listed in Sweet's. A 2603

SS Unit, Texrope and *Vari-Pitch* are Allis-Chalmers trademarks.

ALLIS-CHALMERS, 975A SO. 70 ST.
MILWAUKEE, WIS.

Sold . . .
Applied . . .
Serviced . . .

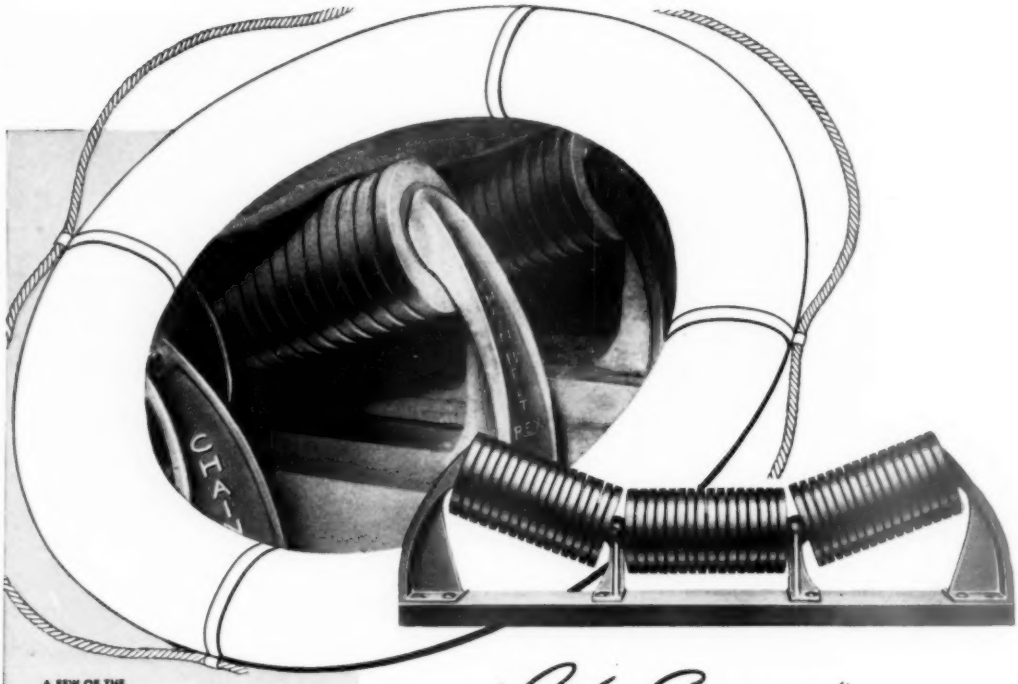
by Allis-Chalmers Authorized Dealers, Certified Service Shops and District Offices throughout the country.

MOTORS — ½ to 25,000 HP and up. Matching Allis-Chalmers Control.

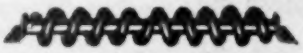
TEXROPE — Belts in all sizes and sections, standard and Vari-Pitch sheaves, speed changers.

PUMPS — Integral motor and coupled types. Sizes and ratings to 2500 GPM.

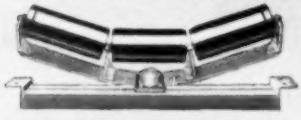
ALLIS-CHALMERS



A FEW OF THE REX IDLER LINE

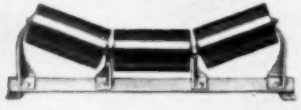


Rex No. 55 Rubber-Covered Spiral Return Idler . . . creates an over-changing point of contact to keep moisture, ice, abrasive and sticky materials from building up on the belt.



Rex No. 33 Self-Aligning Troughing Idler . . . used at intervals to align belt where off-center loading, side-wind drifting and uneven stretch are problems.

Rex No. T-6 Flat Belt and No. T-1 Return Idlers . . . are dead shaft type idlers. They are equipped for high pressure grease lubrication . . . have hydraulic type fittings.



Rex No. 32 Troughing Idler . . . is roller-bearing equipped, can be furnished with steel or gray iron rolls. Has no shelves or pockets to catch dust . . . is self-cleaning.

A "Life Saver" FOR YOUR CONVEYOR BELTS!

Here's a real "life saver" for your conveyor belts! Rex Impact Cushioning Idlers installed under the loading points will take the "bumps" for your belt . . . minimize ruptures and lacerations!

Rex Impact Cushioning Idlers are dual-purpose rubber rolls. These rolls are scientifically molded with (1) deep primary grooves for maximum cushioning . . . and (2) secondary grooves to provide surface softness to protect belt covers from laceration.

Here's deflection under impact! When otherwise damaging blows occur, there is momentary displacement of the rubber that absorbs the shock and cushions the impact force . . . and saves the life of your belt! There's plenty of support for Rex Impact Cushioning Idlers, too . . . heavy, unbreakable brackets on a steel channel base.

Rex Impact Cushioning Idler Rolls are pressed to the Rex Roller Bearing Assembly Tubes . . . the famous tube design that has been leading the field for over twenty-five years . . . with thousands of long-lived applications in almost every industry. For all the facts about these "life saving," belt saving idlers . . . write for Bulletin No. 463. Address Chain Belt Company, 1649 West Bruce Street, Milwaukee 4, Wisconsin.

CHAIN BELT COMPANY REX BELT CONVEYOR IDLERS

CHOOSE "QUICK-WAYS" FOR SURE PROFITS!

REG. U. S. PAT. OFF.

PORTABILITY AND CAPACITY . . . these are the fundamentals you KNOW you want in a truck shovel. You get PORTABILITY in a "QUICK-WAY" because it is built of steel for lightness and strength, no heavy counter-weights to slow you down. You get CAPACITY because balance and stability are designed into your "QUICK-WAY".

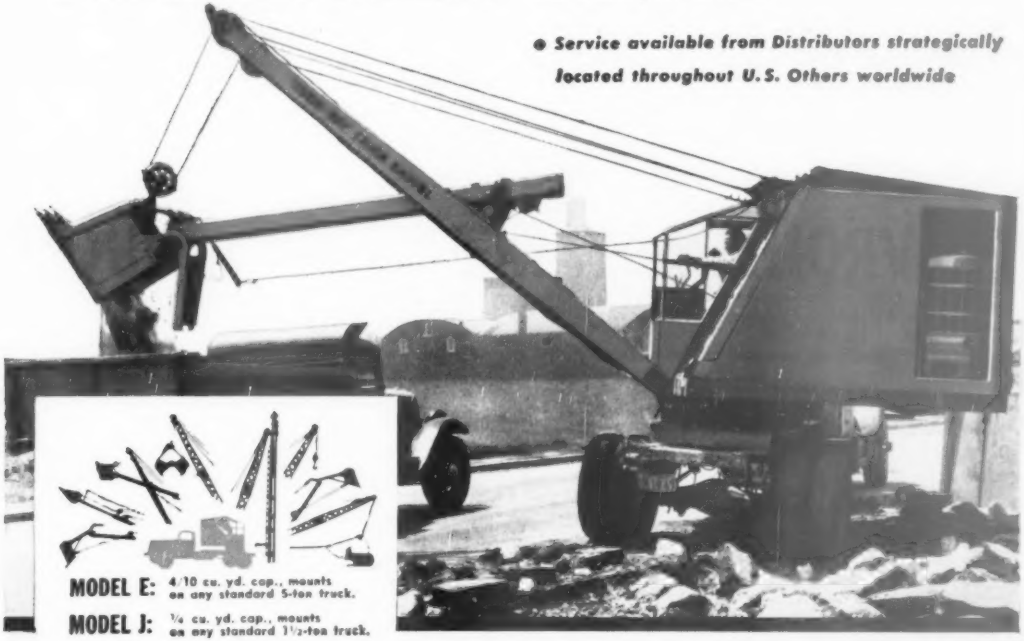
In addition you get SPEED . . . PERFORMANCE . . . VERSATILITY . . . INTERCHANGEABILITY . . . SIMPLICITY . . . ECONOMY OF OPERATION . . . LOW FIRST COST . . . LOW MAINTENANCE . . . and EXTRA PROFITS.

A "QUICK-WAY" mounts on ANY standard truck of proper size to go anywhere a truck can go at truck speed. A "QUICK-WAY" is CONVERTIBLE IN MINUTES from Shovel to CRANE, DRAGLINE, CLAM-SHELL, PILE DRIVER, SCOOP, TRENCH-HOE or BACK FILLER. You buy only the attachments you want. A "QUICK-WAY" is simply built, with many interchangeable parts, all easy to service . . . and durable.

THE FUNDAMENTALS built into every "QUICK-WAY" add up to sure profits on a small investment, with one of the most useful machines you can own.

NO MATTER WHAT OTHER EQUIPMENT YOU OWN, you need "QUICK-WAYS" too. There's a "QUICK-WAY" owner near you; ask HIM.

● Service available from Distributors strategically located throughout U. S. Others worldwide



MODEL E: ⅜ cu. yd. cap., mounts on any standard 5-ton truck.

MODEL J: ½ cu. yd. cap., mounts on any standard 1½-ton truck.

For speed, portability, economy of operation, and adaptability to a wider range of jobs, nothing of comparable size equals a "QUICK-WAY" Truck Shovel.

"QUICK-WAY" TRUCK SHOVEL CO.

DENVER, COLORADO

Choose the Leader . . . *For VALUE!*

CHEVROLET ADVANCE-DESIGN TRUCKS

CHEVROLET From one end of the nation to the other, more truck users buy Chevrolet trucks than any other make. Chevrolet trucks offer more of what truck users want—more power combined with economy . . . more comfort and convenience . . . greater ease of handling . . . more value from start to finish! And to all these advantages you can add the biggest premium of all—3-WAY THRIFT! Here's the one truck that combines low cost operation, low cost upkeep and the *lowest list prices in the entire truck field!*

CHEVROLET MOTOR DIVISION, *General Motors Corporation*, DETROIT 2, MICHIGAN

Chevrolet Trucks alone have all these features

Chevrolet's 4-SPEED SYNCHRO-MESH TRANSMISSION offers quicker, quieter and easier operation in Series 3800 and heavier duty trucks. Faster shifting maintains speed and momentum on grades.

Chevrolet trucks have the famous CAB THAT "BREATHES"*! Outside air is drawn in and used air forced out! Heated in cold weather.

Chevrolet's power-packed LOAD-MASTER ENGINE provides improved durability and efficiency in Series 5000 and 6000 models as well as the world's greatest economy for its size!

Chevrolet Advance-Design brings you the FLEXI-MOUNTED CAB, cushioned on rubber against road shocks, torsion and vibration.

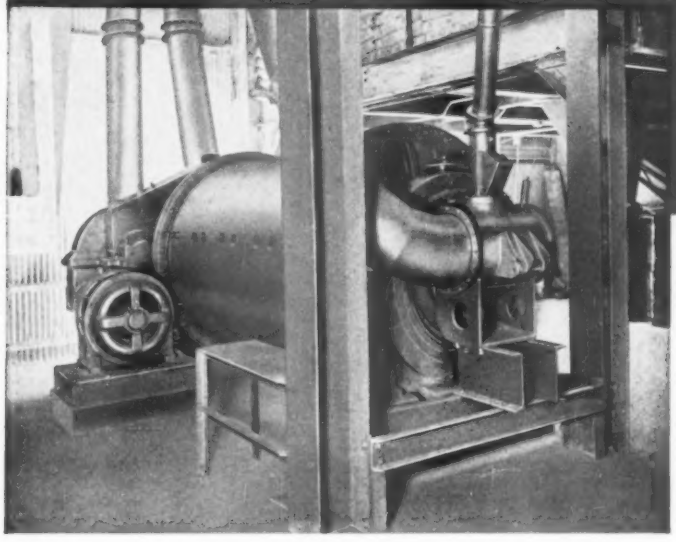
Chevrolet's exclusive SPLINED REAR AXLE HUB CONNECTION adds greater strength and durability to heavy-duty models.

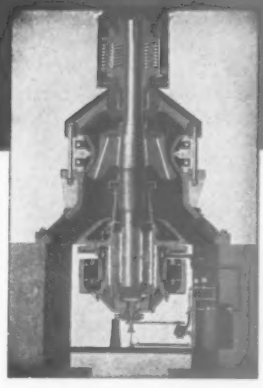
Uniweld, All-Steel Cab Construction • Large, Durable, Fully-Adjustable Seat • All-Round Visibility with Rear-Corner Windows* • Heavier Springs • Super-Strength Frames • Full-Floating Hypoid Rear Axles in the 3600 Series and Heavier Duty Models • Specially Designed Brakes • Hydrovac Power Brakes in Series 5000 and 6000 Models • Standard Cab-To-Axle Length Dimensions • Multiple Color Options.

**Heating and ventilating system and rear-corner windows with de luxe equipment optional at extra cost.*

CHOOSE CHEVROLET TRUCKS FOR TRANSPORTATION UNLIMITED!

KVS Machinery





KENNEDY ROLLER BEARING GEARLESS CRUSHER . . . .

With a Synchronous Motor built in its pulley, this machine shows 80% saving in the cost of maintenance and a saving of 50% in power over geared crushers. It has produced 156 tons per hour when set to 7/16" between the head and concaves at the bottom. The motor runs on roller bearings and is continuously lubricated by a force feed lubrication system. The motor is built especially for this crusher.

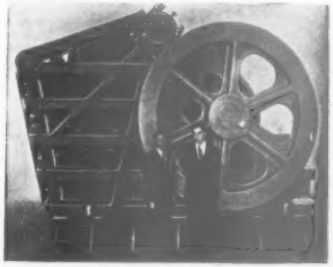
THIS 5½' x 8' KENNEDY AIR SWEPT TUBE MILL PRODUCES 7 TONS PER HOUR—With a feed of ¼ x ¾ in. limestone and dust

Use the Kennedy Air Swept Tube Mill to get superfine grinding at bottom costs. The product ground in this tube mill and collected in three cyclones is (1) 5 tons per hr. of 80% thru 200 mesh, (2) 1 ton per hr. of 92% thru 200 mesh, and (3) 400 lbs. per hr. of 99.8% thru 325 mesh. Simple adjustment permits a desired variation from this combination of fine mesh sizes. The mill is driven through the remarkable Kennedy Integral Gear Drive for Tube Mills. This enables the motor to be direct-connected to the high speed shaft. The gears cannot be misaligned or set wrong. Power required to drive the mill is thus greatly reduced.

Kennedy Vibrating Screens . . .

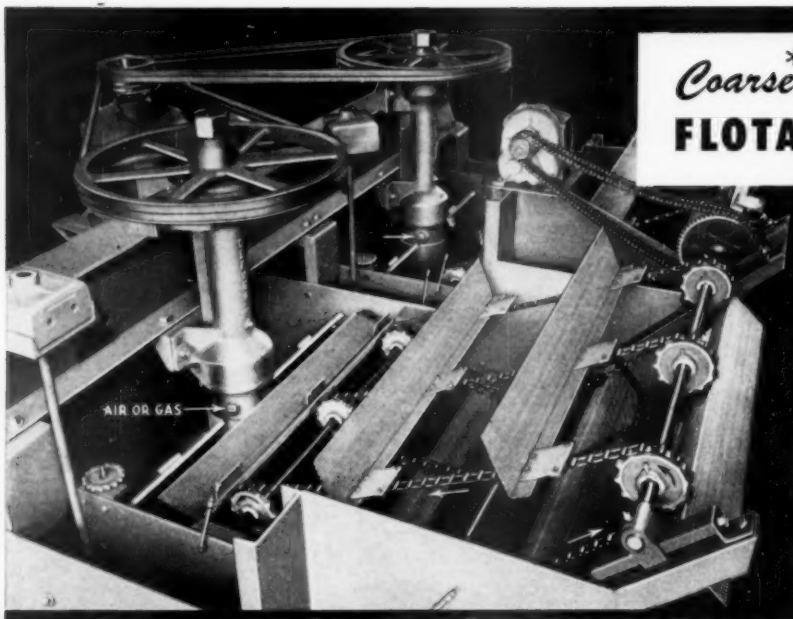
KVS VIBRATING SCREENS give 95% sizing efficiency. Low installation and maintenance costs. Available in three types and many sizes.

KVS Swing Jaw Crusher handles large tonnages of any kind of rock, "just as it comes." Extra heavy duty type. Split frame construction. None of these crushers has ever failed to work. In sizes for all needs.



KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

2 PARK AVENUE • NEW YORK 16, N. Y. FACTORY: DANVILLE, PA.



*Coarse** COAL FLOTATION

Working directly with the Bureau of Mines Coal Preparation Section, and with large coal companies engaged in solving the problem, Denver Flotation Engineers designed a Flotation Machine which does an effective job of coal cleaning as will be noted in the tabulations below from Bureau of Mines Report of Investigations 4306, July, 1948.

Marketable results are obtained on varying types, grades and sizes of coal fractions.

with DENVER "SUB-A" FLOTATION MACHINES

PROBLEM • Treating coal fractions from 1/16"-0. Two objectives are sought—

1) *to save marketable grade of coal in these sizes and*

2) *eliminate stream pollution from wasted slurry water.*

These coal fractions cannot be satisfactorily cleaned by "gravity" methods. With flotation remaining as the most acceptable solution, a prime consideration is that the flotation machine used must be capable of handling both coarse and fine sizes effectively. The rapid rising, dense agglomerate type "matte" coal concentrate must be removed and dewatered in large volume.

SOLUTION • No commercial flotation machine can treat both coarse and fine sizes so effectively as the Denver "Sub-A." This selective feature plus its extreme mechanical and metallurgical flexibility makes it the logical choice for coal cleaning work.

Removal and dewatering of the dense agglomerated "matte" concentrate was accomplished with special "deep-digging" punched plate rakes which carry the 7"-8" coal matte up the spitzkasten allowing surplus water to drain back in the pulp through the perforated rakes. Further dewatering is carried out in a wedge bar compression screw conveyor. Surplus water returns via middling feed pipe to the Denver "Sub-A" Flotation cell for re-use, thus eliminating surplus slurry water.

	SCREEN SIZE, MESH	FEED		CLEANED COAL		REFUSE		DISTRIBUTION, %		Reagents, lbs. per ton feed
		Weight, percent	Ash, 1* percent	Weight, percent	Ash, 1* percent	Weight, percent	Ash, 1* percent	Cleaned Coal	Refuse	
MINE I *	10 to 14	18.8	11.9	23.0	6.2	9.1	31.6	77.6	22.4	Kerosene, 3.27
	14 to 35	51.4	19.1	56.0	7.6	31.9	65.3	80.1	19.9	B-23 Frother, 0.24
	35 to 100	23.3	40.3	17.0	13.4	35.6	81.8	60.7	39.3	Pine Oil, 0.11
	Through 100	6.5	58.3	4.0	19.3	23.4	84.0	39.7	60.3	
	Composite through 10	100.0	25.2	100.0	8.7	100.0	72.5	74.1	25.9	
MINE II *	10 to 35	64.2	10.5	58.2	3.4	54.0	50.7	85.0	15.0	Kerosene, 3.46
	35 to 100	22.6	10.5	26.9	4.6	22.2	66.2	90.4	9.6	B-23 Frother, 0.26
	Through 100	13.2	12.8	14.9	6.3	23.8	64.8	88.9	11.1	Pine Oil, 0.20
	Composite through 10	100.0	10.8	100.0	4.2	100.0	57.5	87.6	12.4	

1*—Moisture free basis

CONSULT WITH YOUR DENVER "FLOTATION ENGINEERS"

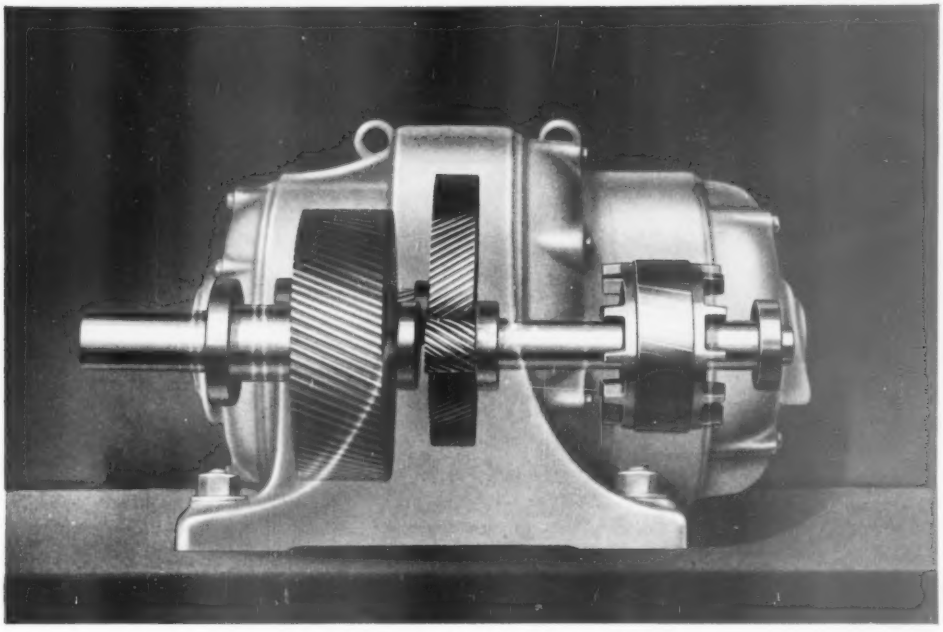
"The firm that makes its friends happier, healthier and wealthier"

DENVER EQUIPMENT COMPANY

P. O. BOX 5268 • DENVER 17, COLORADO

DENVER • NEW YORK CITY • CHICAGO • TORONTO • VANCOUVER • MEXICO CITY • LONDON • JOHANNESBURG • RICHMOND, AUSTRALIA

REPLACE YOUR EXPOSED MOTORS WITH SYNCROGEAR



Diaphanous view of U. S. Syncrogear Motor

THE MOTOR THAT'S GEARED TO ROCK PRODUCT CONDITIONS

Housed for dustiest locations.
Multiplied torque for overloads.
No cumbersome, external gearing.
Completely sealed oil and gear chamber.
Asbestos-protected windings.

MOTORS FAIL in Rock Products plants because of exposure to dirt, dust and moisture, and because overloads impose too much burden. The motor slows down. That means lost production. The motor heats up. That's bad for the windings and leads to a burnout. Now, by installing a *U. S. Syncrogear Motor* you get multi-protection. The Syncrogear needs no cover. It's streamlined and housed to ward off dust, dirt, drippings. Its gear train is self-contained within a ruggedly designed pyramidal case. So no external gear box and connecting belts and pulleys are required. Torque is greatly multiplied, so there's no lag in speed when handling peak loads. You save power and space. Burnouts are avoided because every U. S. Motor is asbestos-protected. The Syncrogear gives you a complete, dependable "power package" of two machines in one—motor and gear train best suited to Rock Product conditions. Single, double and triple reductions, ¼ to 30 h.p. Variable speed too, if desired, up to 50 h.p.

KEEP YOUR ROCK PRODUCT OUTPUT AT TOP CAPACITY, ECONOMICALLY WITH

U. S. SYNCROGEAR MOTOR

(Turn to next page)

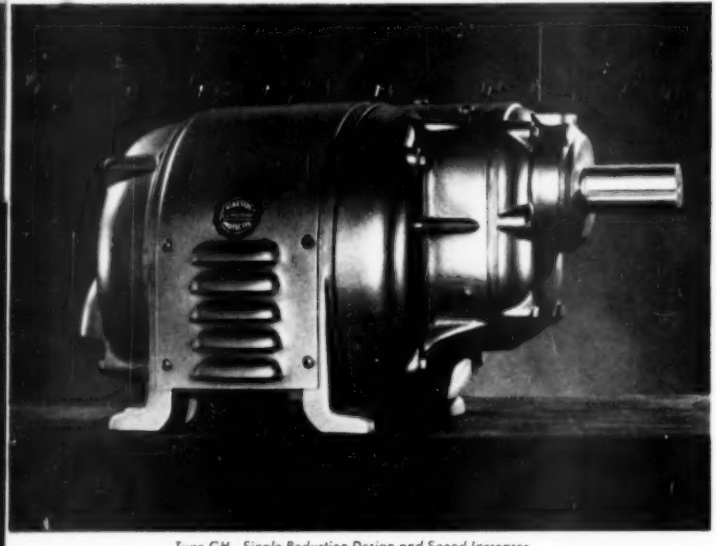
Syncrogear operating bucket conveyor carrying dry, dusty ceramic clay in packing room.

The sealed SYNCROGEAR is self-protecting under worst conditions

This Syncrogear operates blower on a movable drying kiln, in dust and dirt.

U. S. SYNCROGEAR MOTORS—10 TO 10,000 RPM

Syncrogears are well housed—the ideal motor for dusty conditions. The gear train is sealed. No dust or grit can intrude. The motor housing is streamlined. You don't have to put a cover over it. No external gear boxes are required. You can have any gear ratio desired up to 262 to 1. The Syncrogear can be used to power most of your equipment such as Agitators, Asphalt Mixers, Ball Mills, Blowers, Centrifuges, Conveyors, Cranes, Crushers, Dehydrators, Dryers, Exhausters, Fans, Grinding Mills, Hammermills, Hoists, Hoppers, Kilns, Loaders, Mixers, Pulverizers, Screens, Slurry Mixers, Tramways, Vibrators and Winches.



Type GH—Single Reduction Design and Speed Increaser

ALL U.S. MOTORS *embody these plus-values*

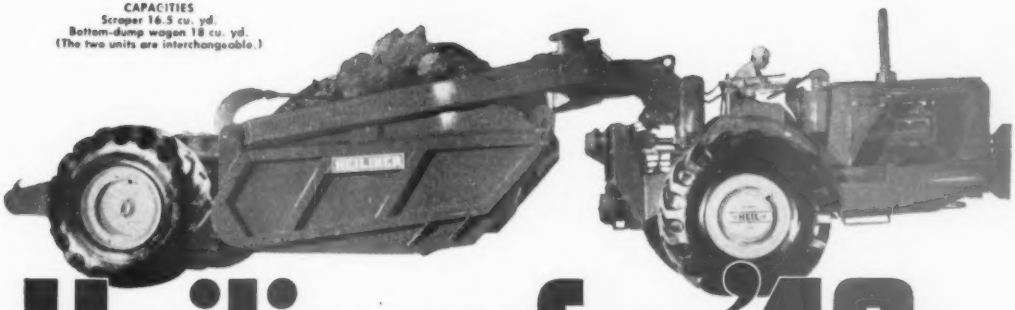
ASBESTOS-PROTECTED WINDINGS
NORMALIZED CASTINGS
LUBRIFLUSH LUBRICATION
(OR) SEALED LUBRICATION
STREAMLINED, DRIP-PROOF DESIGN
CENTRIFUGALLY-CAST ROTOR
DUAL BLAST VENTILATION
GENUINE AUTOSTART ACTION

ASK FOR DESCRIPTIVE BULLETIN
We have prepared an interesting Bulletin featuring U. S. Syncrogear Motors in various types and capacities for Rock Products plants. It's free. Request a copy.

U.S. ELECTRICAL MOTORS Inc.

PACIFIC PLANT: Los Angeles 54, Calif. • ATLANTIC PLANT: Milford, Conn.
District Offices: Boston 16, New York 6, Philadelphia 2, Pittsburgh 22, Chicago 8, San Francisco 7, Seattle 4

CAPACITIES
Scraper 16.5 cu. yd.
Bottom-dump wagon 18 cu. yd.
(The two units are interchangeable.)



Heiliner for '49

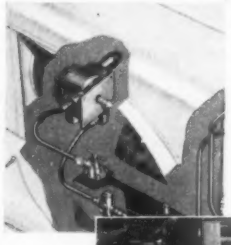
More Power... Moves More Dirt at Less Cost

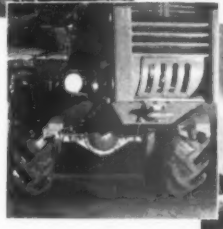
Heil's patented hydraulic Hydra-Steer lets your operator drive the Heiliner with the ease of a passenger car. This ease reduces fatigue, increases safety and maneuverability, results in faster haul-cycles.

The Heiliner's patented hydraulic pump delivers a constant volume of oil regardless of engine rpm. Steering is safe and positive at all times.

Heiliner drive-wheels carry 70% of the total vehicle weight, so as to make full use of the 200-hp engine. This gives you maximum traction and a top speed of 25 mph loaded.

Heiliners cut maintenance downtime and use it to move more dirt. Both rear-end and transmission can be removed without pulling the wheels. No propping or shoring is needed for this operation.





1. New 200-hp Cummins Diesel gives you plenty of power for lugging and for high top-speed.

2. HEIL'S patented, positive Hydro-Steer gives you passenger-car ease of handling... lets you make *more* round trips.

These and many other Heiliner features make dirt-moving more profitable. Get all the facts about the Heiliner and the complete line of Heil earthmoving equipment. Check the coupon below and mail it today.

THE HEIL CO.

THE HEIL CO., Dept. 7739, 3077 W. Montana St., Milwaukee 1, Wis.

Please send me a bulletin describing all the many money-saving advantages of the amazing Heiliner.

NAME ..... TITLE .....

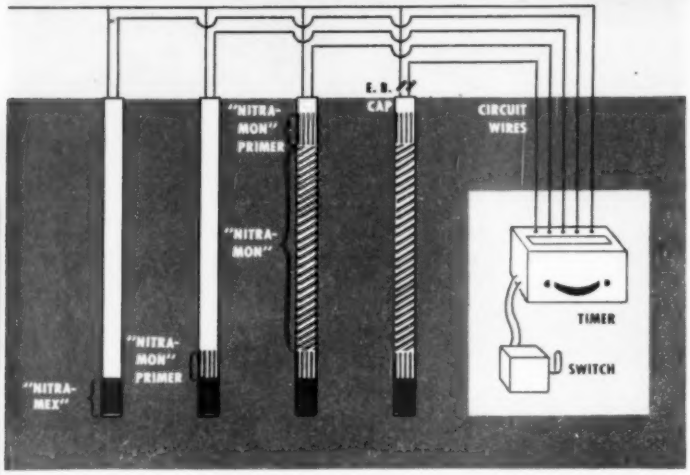
COMPANY .....

ADDRESS .....

CITY ..... ( ) STATE .....

A QUARRY BLASTING PLAN THAT INCREASES EFFICIENCY and SAFETY

Reduces Vibration • Improves Breakage



Here is a quarry blasting plan that is safer than conventional methods of blasting. It utilizes Du Pont "Nitramon". . . the safest blasting agent available. Safety is further promoted by using blasting caps above ground, and hooking them into the circuit only after all other arrangements for the blast have been completed. Study the diagram above.

1 DU PONT "NITRAMEX"

is loaded at bottom of well drill holes if, and when, hard-shooting rock is encountered.

2 "NITRAMON" PRIMER

with Primacord attached is then loaded. Primacord extends above collar of hole.

3 BALANCE OF "NITRAMON" CHARGE

is loaded with one or more additional primers and second line of Primacord.

4 DU PONT BLASTING TIMER

is located at a safe distance from blast. Circuit wires attached and extended to drill holes. Circuits are tested.

5 ELECTRIC BLASTING CAPS

are taped to Primacord above ground. Lead wires are attached, and charge is ready for detonation.

6 TIMER IS CONNECTED

to power line through remote switch. Time intervals selected produce blast with less vibration and better fragmentation.

Ask any Du Pont Explosives representative for complete information about this better, safer quarry blasting plan. E. I. du Pont de Nemours & Co. (Inc.), Explosives Department, Wilmington 98, Delaware.

DU PONT EXPLOSIVES

(ELECTRIC BLASTING CAPS—"NITRAMON"—"NITRAMEX"—DYNAMITES BLASTING SUPPLIES AND ACCESSORIES)

Du Pont Blasting Timer Creates Blast with "peeling" action

Product of Du Pont Explosives Research, the Blasting Timer provides 15 circuits with a wide selection of delay intervals. These range from .010 to .025 second in increments of .005 second. Split-second blasts made with the Timer in effect "peel" the rock from the quarry face. 110, 220, 440 or 550 volt circuits may be used.

"NITRAMON"*—THE SAFEST BLASTING AGENT

Cannot be detonated with blasting caps, open flame, by friction, or even the impact of high-powered rifle bullets. Dependably detonated with "Nitramon" Primers, however. Packed in watertight containers.

"NITRAMEX"†

. . . companion product to "Nitramon" and used in combination with the latter. Has extra strength required for shooting hard rock wherever encountered.

DU PONT ELECTRIC BLASTING CAPS

These popular caps have three outstanding safety features approved by blasters everywhere:

NYLON-INSULATED WIRES

RUBBER PLUG CLOSURES

ALUMINUM FOIL SHIELDED SHUNTS

* Reg. Trade-mark for nitrocarbonitrate blasting agent

† Trade-mark for Du Pont ammonium nitrate blasting agent

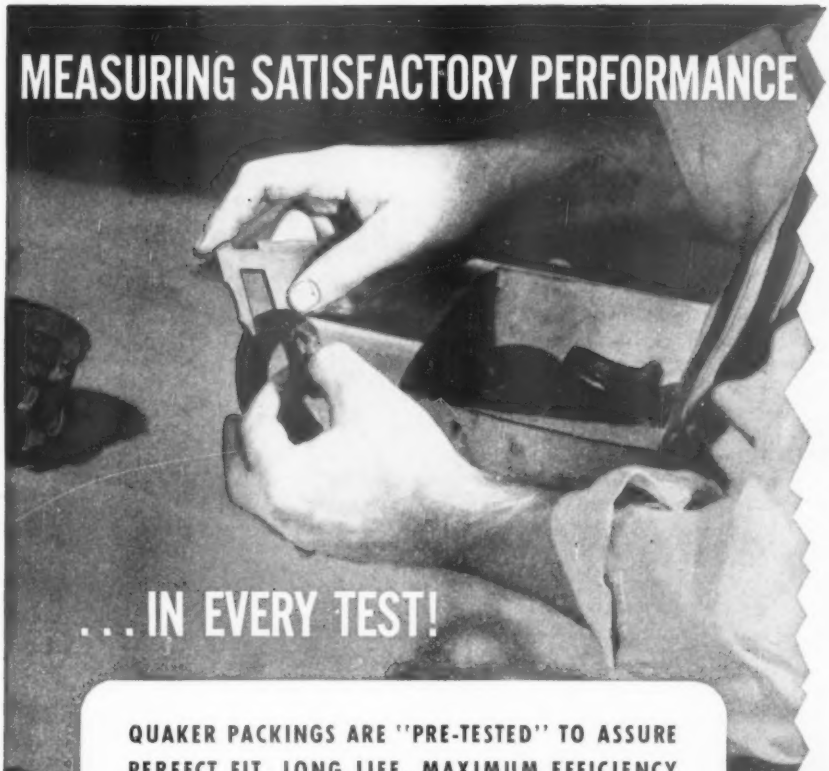
Listen to "Cavalcade of America" Monday Evenings — NBC

DU PONT

REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

MEASURING SATISFACTORY PERFORMANCE



. . . IN EVERY TEST!

QUAKER PACKINGS ARE "PRE-TESTED" TO ASSURE PERFECT FIT, LONG LIFE, MAXIMUM EFFICIENCY

Packings to be efficient must be perfect in fit . . . must form a tight seal in pumps, flanges, valve stems, piston rods to prevent leaks . . . must be of exact quality to meet the operating requirements of the rugged conditions encountered in the rock products industry.

That's why Quaker Packings are "pre-tested." Carefully calipered for size and fit . . . painstakingly checked for quality. Above we see the final test, one of many pre-tests Quaker Packings must go through before they are ready for use. Tests that are safeguards against costly leaks, troublesome shutdowns, loss of production.

There's a Quaker Packing for every type of service in the rock products industry—water, air, gas, oil, at extreme temperatures . . . all pre-tested for better performance.

HOSE THAT LASTS

. . . because it has been pre-tested to stand pressure and resist rugged wear of stone and gravel. Quaker Hose is available for use with air, water, steam, volatiles and gases.

FOR PEAK HORSEPOWER

Belts for conveying material or transmitting power . . . Quaker has the right one to fit every need in the rock products industry. Pre-tested belts that assure peak efficiency and maximum production under all operating conditions.

QUAKER RUBBER CORPORATION

PHILADELPHIA 24, PA. • New York 7 • Cleveland 15 • Chicago 16 • Houston 1
Western Territory
QUAKER PACIFIC RUBBER CO. • San Francisco 10 • Los Angeles 21 • Seattle 4

QUAKER

RUBBER PRODUCTS

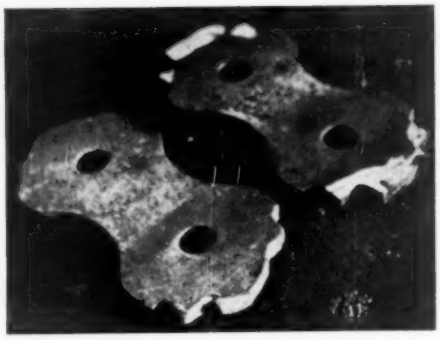
QUAKER RUBBER CORPORATION PHILADELPHIA QUALITY SINCE 1885

REG. U. S. PAT. OFF.

RESISTO-LOY and ISOROD hammers big and small

RESISTO-LOY has proven very efficient on all types of hammers used in hammer mills from the largest primary hammers for crushing ore aggregates, limestone and coal to the smallest type for grinding and pulverizing rocks, technical cements and even face powders.

The larger hammers are first built up to approximate size, using MANGATONE N.M. or a good nickel-manganese electrode, then a wash coat of ISOROD to bring to size and balance, then the corners are given a layer of RESISTO-LOY to take the hardest abrasion and impact.



The smaller hammers usually found in feed mills are built up using RESISTO-LOY ALONE either by oxy-acetylene or the electrode process.

It is not unusual to get four or five times the normal service from hammers so treated, as you get from new original equipment. Some users claim as much as ten times the service on feed mill hammers as original equipment.

ISOROD will definitely prolong the life of grouser bars and grate bars used in hammer mills. Impact plates can also be made to render greater service life by coating them with beads of RESISTO-LOY.

RESISTO-LOY will not chip, flake nor spall when subjected to the severest impact combined with extreme abrasion.

Write our nearest representative for details

Southern Representative: The Barrios Company, International Trademart, New Orleans, La.
Central Representative: J. E. Oliphant & Co., 505 Uhler Bldg., Marion, Ohio.
South-Central Representative: Barney E. David, 518 E and C Bldg., Denver, Colo.
Mid-Western Representative: Red Arrow Sales Corp., 12 So. Livingston St., Madison 3, Wis.
Western Representative: L. R. Edminster, 2751 S. W. Hume Ct., Portland 1, Ore.

RESISTO-LOY COMPANY • GRAND RAPIDS 7, MICHIGAN

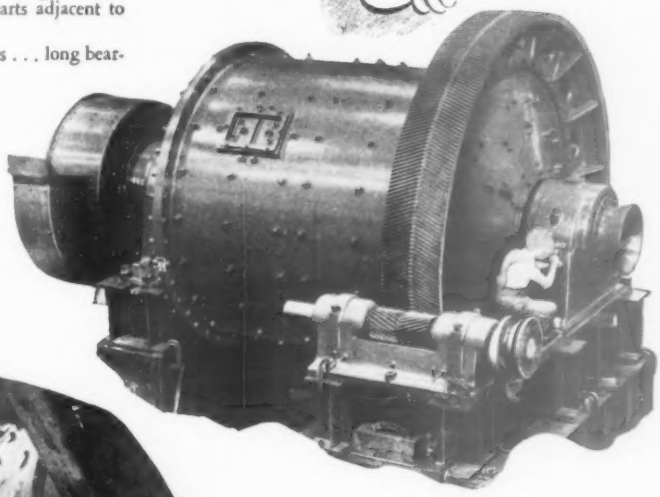
2 Things to Consider in Buying Grinding Mills...

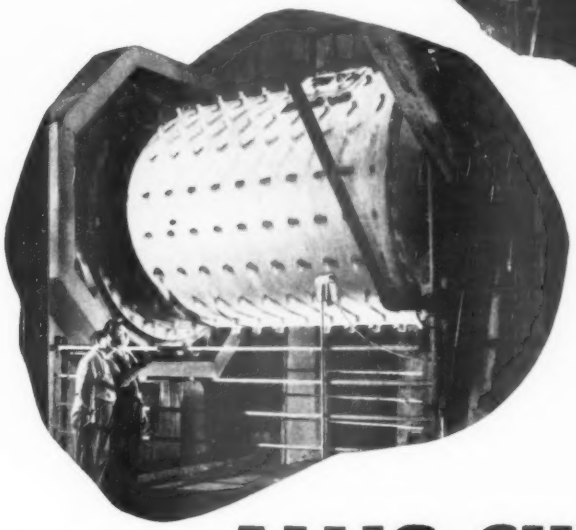
INSIST ON STURDY MILL CONSTRUCTION

You'll find extra-strength features a-plenty in Allis-Chalmers *grinding mills!* All-welded mill shells, for example, are "stress-relieved" in Allis-Chalmers' huge annealing furnaces. That means longer mill life . . . because parts adjacent to welds are relieved of all strain.

Large bearings mean low bearing pressures . . . long bearing life. The use of conical mill heads gives you the highest strength per pound of metal used.

Experience is another advantage you get when you specify Allis-Chalmers. Experience gained in building over 4,000 *grinding mills*. Experience in improving grinding mill design to the point where you'll get minimum maintenance . . . freedom from costly shut-downs . . . efficient operation year after year — from Allis-Chalmers!





AND LOW-COST OPERATION . . .

Best grinding economy is possible only when the type and size of your mill is specifically suited to your job. Allis-Chalmers builds *five separate types of grinding mills* . . . in a wide range of sizes . . . available in overflow, diaphragm grate, or any special type with feeders and drives designed to give you top grinding efficiency.

There is an Allis-Chalmers representative near you who will be glad to discuss your grinding problems with you. Call him today. Offices or distributors in principal cities in the U. S. and throughout the world. A-2659

ALLIS-CHALMERS, 975A SO. 70 ST.
MILWAUKEE, WIS.

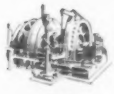
ALLIS-CHALMERS

Jaw Crushers

Gyratory Crushers

Vibrating Screens

Kilns, Coolers and Dryers


Hoists

. . . and Other Equipment for the Crushing, Cement and Mining Industries

Grip the Sides of

ANY V-Belt . . .

FEEL the Sides CHANGE SHAPE

as the belt Bends –

–That SHOWS you Exactly WHY

THE CONCAVE SIDE

(U. S. PATENT NO. 1813698)

SAVES You MONEY

Bend any V-Belt and you can actually feel its sides change shape.

That's because the bending puts the top of the belt under *tension*, while the body undergoes *compression*. Naturally the sides of the belt *bulge out*—and if the belt is built with *straight sides*, you get the result shown in Figures 1 and 1-A, below:—

Straight-Sided V-Belt

How Straight-Sided V-Belt Bulges in Sheave-Groove.

Clearly, the bending forces a straight-sided V-Belt into a shape that does not fit the sheave-groove—and the bulging produces excessive wear along the *middle* of the *sides*.

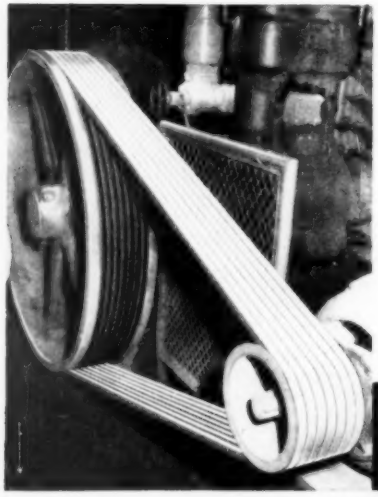
Now, bend the V-Belt built with the precisely engineered Concave Side (U. S. Patent No. 1813698)—the Gates Vulco Rope.

Gates Vulco Rope With Concave Side.

No Side Bulge. Precise Fit in Sheave-Groove.

You get the same shape change but *now* the new shape *exactly fits* the sheave-groove as shown in Figures 2 and 2-A.

Results—(1) *Uniform* side-wall wear; *longer* life. (2) *Full* sidewall grip on the pulley; carries heavier loads and sudden load increases without slippage — a big increase in drive efficiency — saving belt wear and also saving power!



The Concave Side is *MORE IMPORTANT NOW* Than Ever Before

Because the *sides* of a V-Belt are what actually *drive* the pulley, it is clear that any increased load on the belt means a heavier load that must be transmitted to the pulley *directly* through the belt's sidewalls.

Now that Gates *SPECIALIZED* Research has made available to you SUPER Vulco Ropes—carrying fully 40% higher horsepower ratings—the life-prolonging Concave Side naturally delivers greater savings today than ever before.

THE GATES RUBBER COMPANY
DENVER, U. S. A.
The World's Largest Makers of V-Belts

Gates

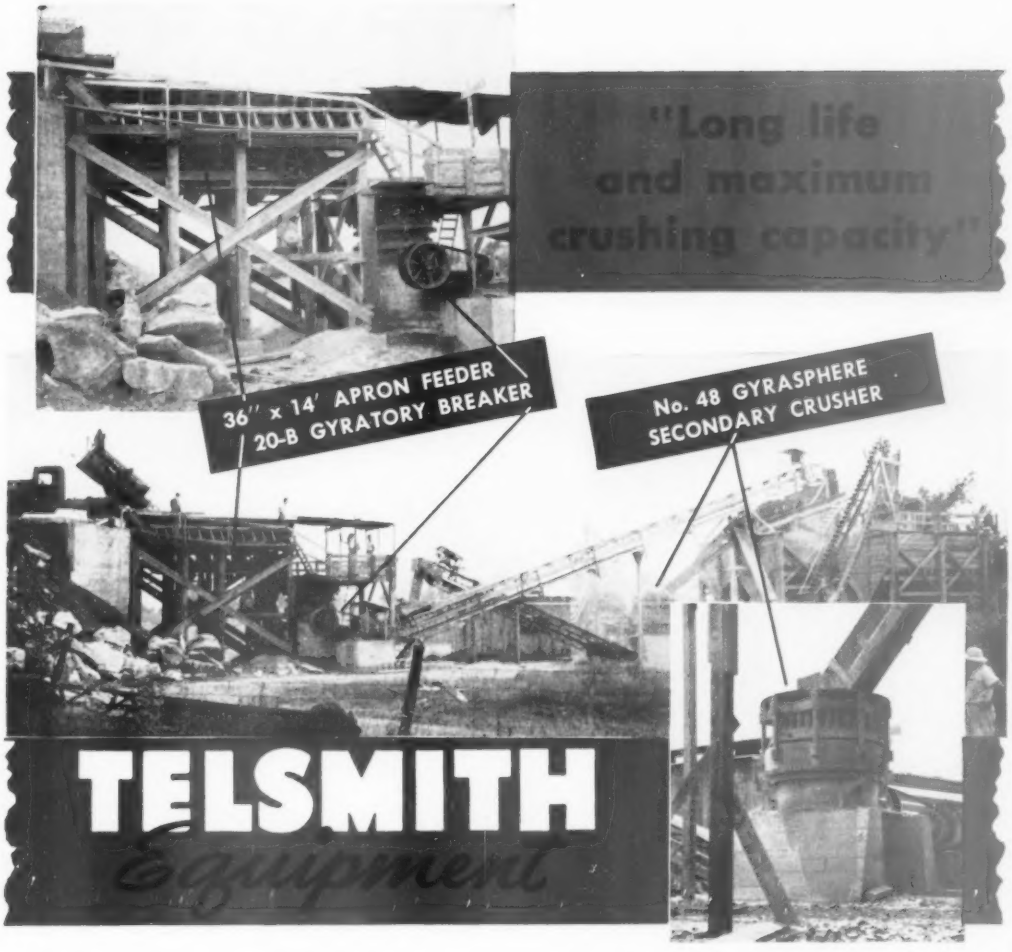
REG. U.S. PAT. OFF.

482

The Mark of SPECIALIZED Research

GATES VULCO ROPE DRIVES

Engineering Offices and Jobber Stocks **IN ALL INDUSTRIAL CENTERS** of the U. S. and 71 Foreign Countries



● The McLellan Stone Co. has a new quarry plant near Bowling Green, Ky. In speaking of his Telsmith equipment, Mr. George McLellan says:

"Its long life and maximum crushing capacity is the reason for our selection of your crushing equipment."

The plant is crushing limestone. Capacity is 100-150 tons per hour. Its main products are aglime and ½" and ¾" chips used in resurfacing Kentucky's black-top roads. The plant is also able to make concrete aggregate.

The plant's 36" x 14' Telsmith Heavy-Duty Apron Feeder is built to take the heaviest loads of quarry rock that the trucks can dump on it. Steadily and smoothly it feeds the big capacity primary crusher —a 20-B Telsmith Gyratory Breaker. These two Telsmith units are a great pair for low-cost production.

And they're backed up by a super secondary crusher. A No. 48 Telsmith Gyrasphere that takes the product of the primary crusher as fast as it comes. Takes it at choke feed. And continuously turns out top tonnage of a finer, more cubical product at an exceptionally low cost per ton.

Are you building a new plant? Expanding? Modernizing? Consult Telsmith. Send for Bulletin O-11. 2-39

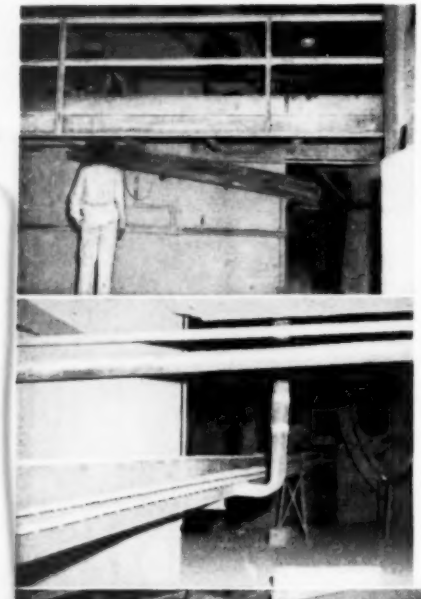
SMITH ENGINEERING WORKS, 508 E. CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

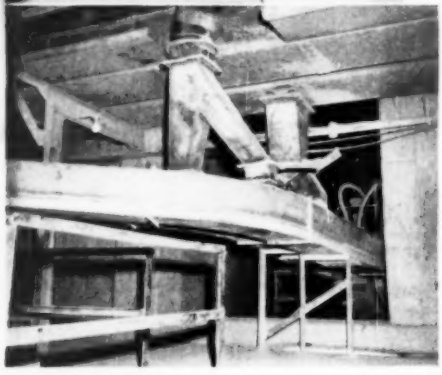
Cable Address: Sengworks, Milwaukee

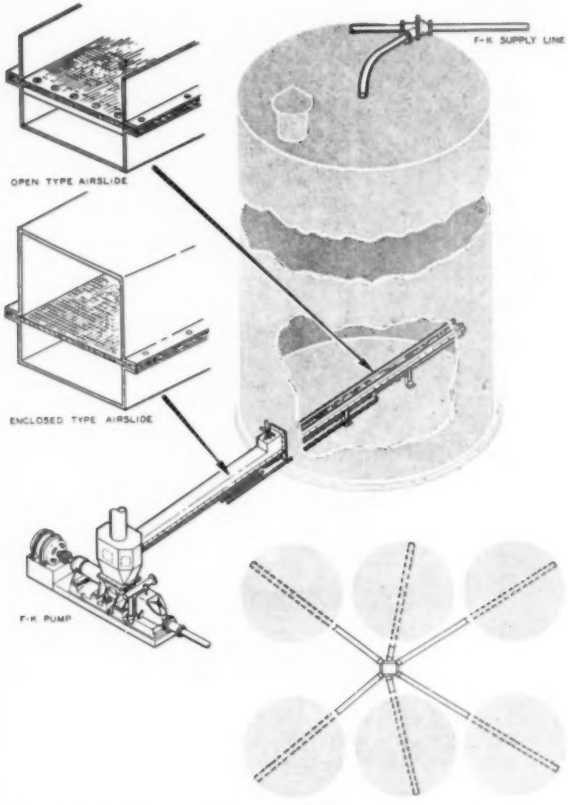
51 East 42nd St. New York 17, N. Y. • 211 W. Wacker Drive Chicago 6, Ill. • 713 Commercial Trust Bldg. Philadelphia 2, Pa. • 238 Main Street Cambridge 42, Mass. • Boehck Eqpt. Co. Milwaukee 3, Wis. • Mines Eng. & Eqpt. Co. San Francisco 4, Calif.

Clyde Eqpt. Co., Portland 9, Ore., & Seattle 4, Wash. • General Machinery Co., Spokane 1, Wash. • Brandeis Machinery & Supply Co., Louisville 8, Ky. • Rish Eqpt. Co., Charleston 22, & Clarksburg, W. Va.—Roanoke 7, & Richmond 10, Va. • Wilson-Weesner-Wilkinson Co., Knoxville 8, & Nashville 6, Tenn.

ANNOUNCING--







Airslides for withdrawing and conveying from a group of storage bins to a central point, such as a Fuller-Kinyon Pump, for conveying to process, blending, and recirculating. The Airslide, within the bin, serves also as an aerator, to increase the amount of active storage.

Upper photo, left: Conveying pulverized materials from mill discharge to elevator. Capacity 80 tons an hour. Illustrates the flexibility of the Airslide, demonstrated by the ease in which change in direction can be accomplished. Middle photo shows simple supports; also air-supply line entering air chamber, which can be placed at any convenient point. Bottom photo shows 14-in. conveyors, which convey the total output of nine separators, with a total capacity of 225 tons per hour.

FULLER LIFETIME EQUIPMENT FOR THE CHEMICAL PROCESS INDUSTRY

FULLER-KINYON, FULLER-FLUXO, AIRVEYOR, F-H AIRSLIDE CONVEYING SYSTEMS . . . ROTARY FEEDERS AND VALVES . . . ROTARY AIR COMPRESSORS AND VACUUM PUMPS . . . INCLINED-GRATE COOLERS . . . DRY PULVERIZED-MATERIAL COOLER . . . AERATION UNIT . . . MATERIAL-LEVEL INDICATOR . . . MOTION SAFETY SWITCH . . . SLURRY VALVES . . . SAMPLERS . . . AIRLIFT . . . CONSTANT-HEAD FEEDER.

F-H AIRSLIDE

A REVOLUTIONARY TYPE OF CONVEYOR . . . NO MOVING PARTS!

In this unique conveyor, partly aerated pulverized materials flow, by gravity, on a slightly inclined, porous surface. The equipment comprises a lower channel, forming an air chamber, having an upper surface of porous material, usually heavy fabric, upon which the material flows, and an upper channel to contain the material.

Open type Airslides increase the effective storage capacity of flat-bottom bins; and discharge the material without requiring complete aeration of the bin.

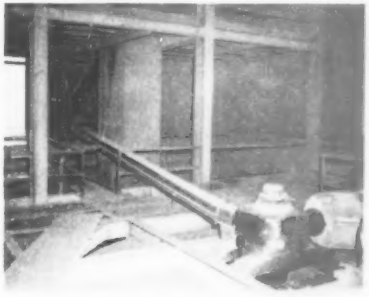
The most important advantage of the Airslide is its remarkably low-power requirement, usually about one-tenth of the power of a screw conveyor of similar capacity.

A novel feature of the design is a porous surface of low air permeability, which assures uniform distribution of low-pressure air, e.g. 6-in. W.G. The flow of material starts and stops almost instantly with control of the air supply. The quantity of air is too low to cause dusting, or to require dust-collecting equipment. The Airslide can be emptied, sufficiently for practical purpose, by stopping the feed and continuing the flow of air for a short period.

The principal commercial uses to date have been in the cement industry, for the handling of raw materials, including mill stream, air-separator tailings, and kiln feed; and for the handling of cement including preliminary feed, air-separator tailings, and finished cement, in the plant; and in carriers, such as bulk trucks and a ship. It has also been used to convey a variety of fine materials, such as, for example, gypsum, soda ash, barite, bentonite, lime, fly ash, and iron ores.

Trade marks: "F-H AIRSLIDE" (Patents pending)

Air separator-tailings conveyor, split to return an accurately divided stream to two pulverizer mills. (Diversion of stream readily adjustable by mill operator).



Airslide conveying cement clinker mill product from an elevator to an air separator.

ADVANTAGES

Extremely low power consumption
Small volume of air at low pressure
Dustless operation
High capacity with low headroom
Ease in change of direction
Ease of erection
Simple floor or overhead support releases valuable floor space for other purposes
Permits flexibility of plant design, not available with straight-line conveyors
Low maintenance
Noiseless operation.

ELIMINATES

Industrial accident hazards
Lubrication
Complicated and expensive drives, such as chains, belts, speed reducers, etc.
Frequent and costly interruptions in production
Costly labor charges to make repairs and replacements
Large stock of repair parts
Weight and bulk.

FULLER COMPANY

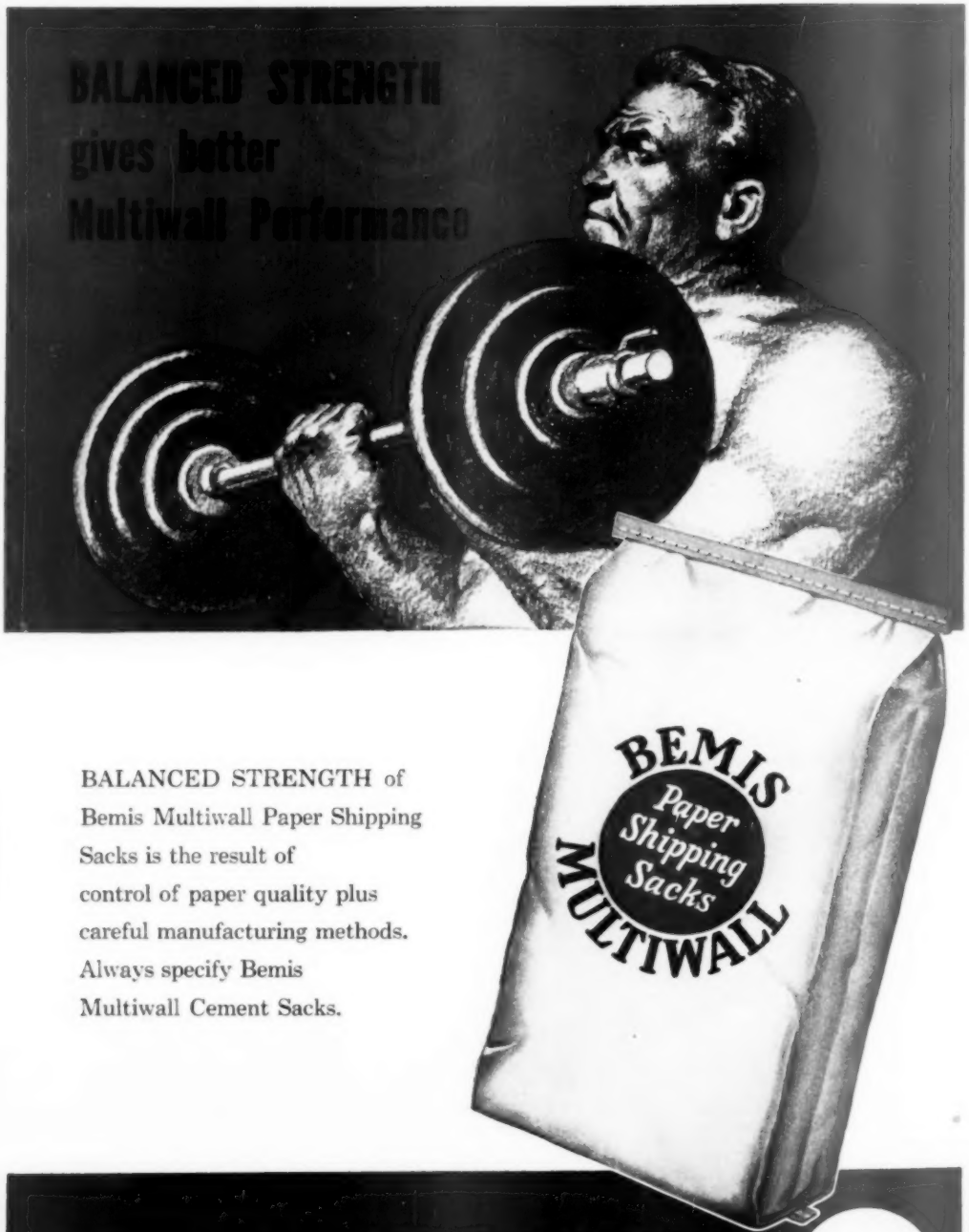
CATASAUQUA — PENNSYLVANIA

CHICAGO 3
120 So. LaSalle St.

SAN FRANCISCO 4
420 Chancery Bldg.

F AIRSLIDE H

FH-2T



BALANCED STRENGTH of Bemis Multiwall Paper Shipping Sacks is the result of control of paper quality plus careful manufacturing methods. Always specify Bemis Multiwall Cement Sacks.

BEMIS

"America's No. 1 Bag Maker"

Peoria, Ill. • East Pepperell, Mass. • Mobile, Ala. • Houston, Texas
San Francisco, Calif. • Vancouver, Wash. • Wilmington, Calif.
Baltimore • Boise • Boston • Brooklyn • Buffalo • Charlotte
Chicago • Cleveland • Denver • Detroit • Jacksonville, Fla.
Indianapolis • Kansas City • Los Angeles • Louisville • Memphis
Minneapolis • New Orleans • New York City • Oklahoma City
Norfolk • Omaha • Phoenix • Pittsburgh • St. Louis • Salina
Salt Lake City • Seattle • Wichita

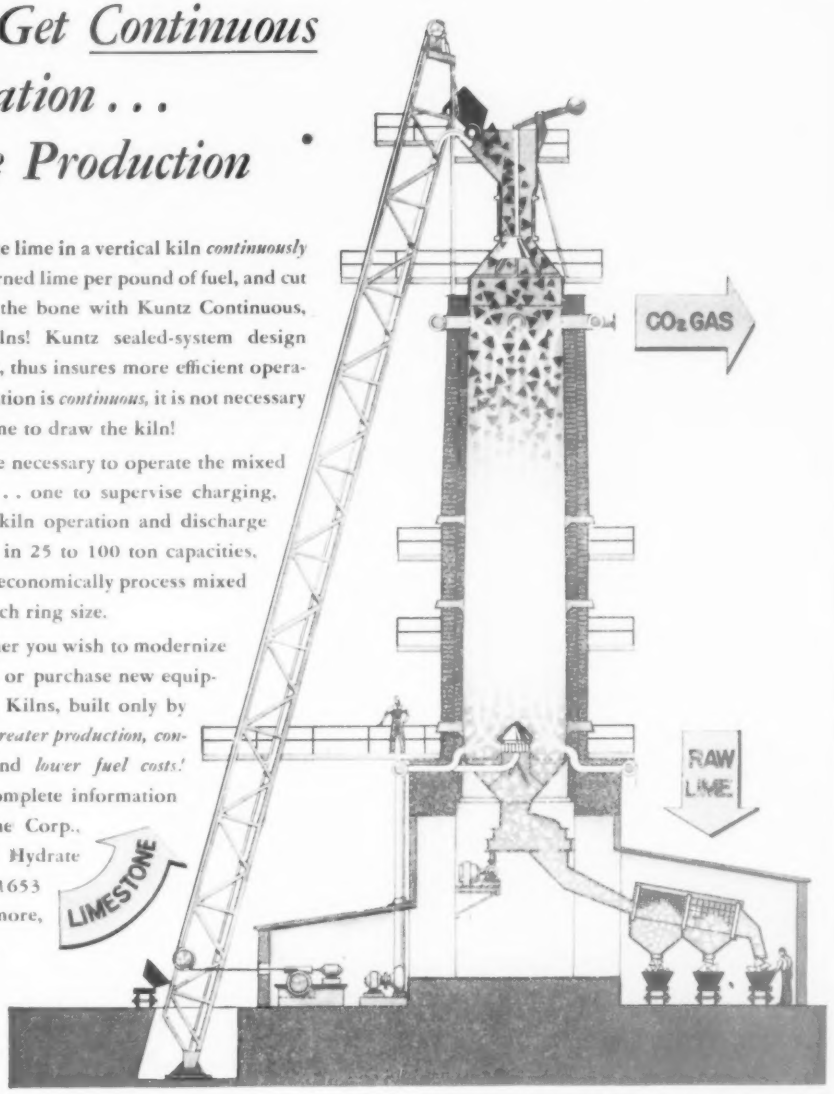
How YOU can CUT the cost of BURNING LIME

and Get Continuous Operation . . . More Production

YOU can produce lime in a vertical kiln *continuously* . . . get *more* burned lime per pound of fuel, and cut overhead costs to the bone with Kuntz Continuous, Vertical Lime Kilns! Kuntz sealed-system design reduces heat losses, thus insures more efficient operation. Because operation is *continuous*, it is not necessary to stop burning lime to draw the kiln!

Only *two men* are necessary to operate the mixed feed kiln shown . . . one to supervise charging, the other to tend kiln operation and discharge of lime! Available in 25 to 100 ton capacities, Kuntz Lime Kilns economically process mixed stone of 3 to 10 inch ring size.

No matter whether you wish to modernize your present kilns or purchase new equipment, Kuntz Lime Kilns, built only by Ellicott, give you *greater production, continuous operation* and *lower fuel costs!* Write today for complete information to Ellicott Machine Corp., Kuntz Lime and Hydrate Plants Division, 1653 Bush Street, Baltimore, Maryland, U. S. A.



Covered by patents and patent applications in U.S.A. and abroad

ELLICOTT MACHINE CORPORATION

KUNTZ LIME AND HYDRATE PLANTS DIVISION

1653 Bush Street, Baltimore, Maryland, U. S. A.

How Bucyrus-Erie Blast Hole Drills Can Save You Money

LOWER MAINTENANCE REQUIREMENTS

The lower maintenance requirements of Bucyrus-Erie blast hole drills help them put the skids to rock preparation costs. Outstanding hole production, day-in and day-out, with minimum fuss and bother, is what you get with a Bucyrus-Erie on your location. And here are the reasons why:

1. Electric-welded frames and derricks are rigidly braced to resist the stresses of long and sustained use. Rivetless structure eliminates any shaking loose by vibration. Frame design provides for compact arrangement of machinery and accessibility of all parts. Machinery is tough, simple, easy to adjust.

2. Rubber shock absorber at the derrick-head and rubber-insulated heel and spudding beam sheaves provide defense against harmful shock to drill and line. Power rides smoothly on anti-friction bearings.

3. Every Bucyrus-Erie blast hole drill is so designed that all functions are balanced for maximum efficiency in the unit's working range. This eliminates overstressing of parts . . . helps keep troubles away through years of tough service.

It will pay you to check these Bucyrus-Erie blast hole drills when you plan your new equipment purchases:

22-T	5⅞" to 6⅞"	holes
27-T	6" to 6⅞"	holes
29-T	6" to 9"	holes
42-T	9" to 12"	holes

Gasoline or electric power is available for all machines . . . diesel for all except the 22-T.

BUCYRUS ERIE

24B48

SOUTH MILWAUKEE, WISCONSIN

7 Reasons WHY YOU GET LOWER COST PER TON CRUSHED with LIPPMANN GRIZZLY KING CRUSHERS

Here's the Jaw Crusher You've Been Waiting for . . . With Increased Capacity, Lower Operating and Maintenance Costs, Greater Flexibility!

1. 25% More Crushing Area plus reduced angle of nip gives the long-jawed Grizzly King extra capacity even when crushing extremely hard rock.

2. Wide Range of Product Sizes permits great flow sheet flexibility. Instead of the usual 4-to-1 or 6-to-1 reduction ratios, Grizzly Kings can outproduce comparable machines even when set at 8-to-1 or 10-to-1

3. Positive Setting Control is accomplished by means of shims. It's simple, quick, positive. And pressure is distributed over the full bearing area at all times.

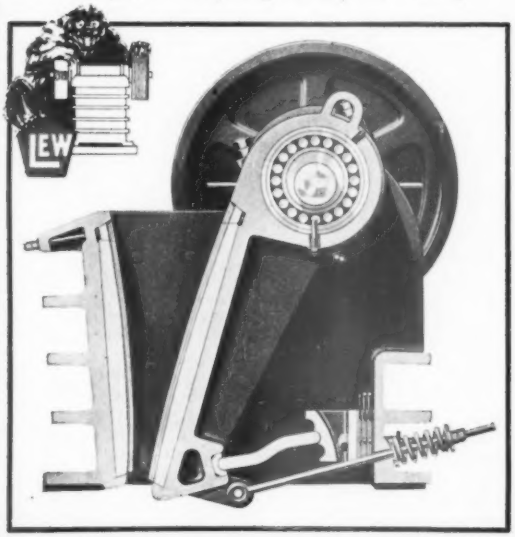
4. Less Fuel Consumption is another Grizzly King economy. On one West Coast job, a Grizzly King not only outproduced but actually used only half the fuel required by either of two crushers built by other manufacturers. All had identical engines.

5. Never a Shaft or Bearing Failure — that's the record of Lippmann Jaw Crushers ever since they were put on the market.

6. Oil Lubricated. Thanks to new improved triple sealing with multiple-groove and labyrinth seals and oil slingers, the Grizzly King is lubricated in the way recommended by bearing manufacturers.

7. Extra Lightweight Strength, possible because of alloy steel construction throughout, means Grizzly Kings are lighter yet stronger. Less weight means easier portability, reduced foundation costs.

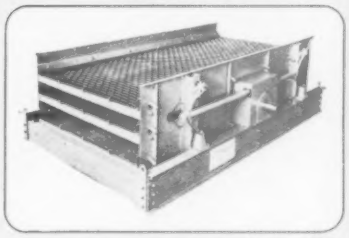
Our new Bulletin 1100 gives complete information on the Lippmann Grizzly King Jaw Crusher. Write for your copy today.



LIPPMANN EQUIPMENT for PITS, MINES and QUARRIES

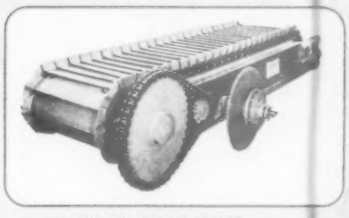
Jaw, Gyratory, Roll Crushers • Pulverizers • Vibrating and Rotary Screens • Loaders and Conveyors • Scrubbers and Washers • Hoppers and Bins • Portable Washing Plants • Self-Propelled Crushing Plants.

OTHER LIPPMANN EQUIPMENT Engineered TO CUT COSTS



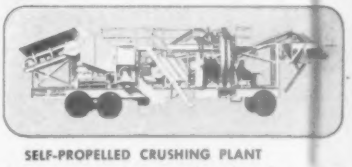
VIBRATING SCREEN

Positive eccentric type has equally distributed vibration for maximum capacity. Vibration contained in screen body entirely. All sizes, single and multi-deck.



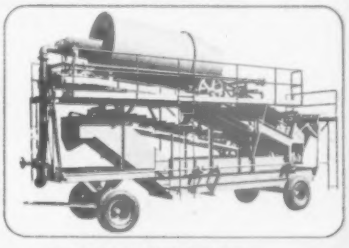
SUPER-DUTY APRON FEEDER

Can handle extremely heavy loads up to 35 feet or even greater lengths. Ruggedly built with cast steel plates. Reciprocating type feeders also available.



SELF-PROPELLED CRUSHING PLANT

Complete aggregate processing plant, including screening and loading, gives greater flexibility of operation. Can be driven and operated by one man.

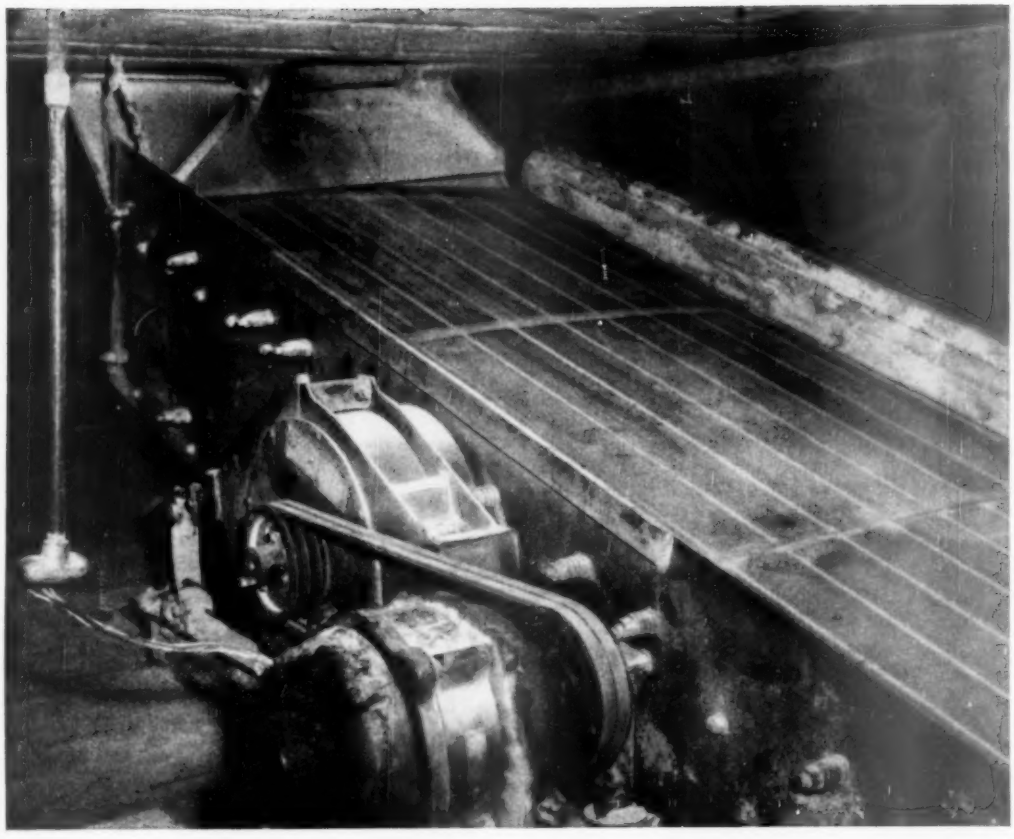


PORTABLE WASHING PLANT

Combines scrubber, vibrating screen, sand drag and connecting conveyors. Capacities up to 120 cubic yards per hour. Keeps up with any paver. Saves time and labor costs.

LIPPMANN ENGINEERING WORKS

4603 W. MITCHELL STREET
MILWAUKEE 14, WISCONSIN



ACCURATE SIZING—at 666 pounds a minute!

High-speed Robins Vibrex Screen sizes 20 tons of agricultural limestone an hour

It happens every day at the Masick Soil Conservation Company in Schoharie, New York.

To size agricultural limestone for use as fertilizer, the company installed the double-deck 5′ x 12′ Robins Vibrex Screen you see above. Its 10-mesh top-deck screen cloth makes the first separation. And its 16-mesh bottom deck completes the sizing . . . at a speed of 666 pounds a minute!

Then most of the screened fertilizer is bagged. The remainder is loaded on spreader trucks for spreading over customers' farms.

Sizing limestone is but one of many uses for Robins Vibrex Screens. You can use them to screen, size, or separate bulk materials. They do your job quickly and accurately . . . at low cost!

And no wonder! Only Robins gives you all four:

1. **Floor-mounted.** You save costly suspension equipment.
2. **Adjustable to load and feed.** You can adjust slope from horizontal to 30°.
3. **Simplified cloth changing.** You can quickly and easily replace cloth.
4. **Self-damping springs.** Eliminate start-and-stop bounce.

You can get Robins Vibrex Screens in sizes from 3′ x 6½′ to 6′ x 16′. Find out how they can help you solve *your* problems. Write today.

ROBINS

VIBREX SCREENS

SEND TODAY for free copy of Robins Bulletin No. 122-A. Fully illustrates and describes features, advantages and benefits of efficient Vibrex Screens. Address Robins Conveyors Division, 270 Passaic Avenue, Passaic, New Jersey.

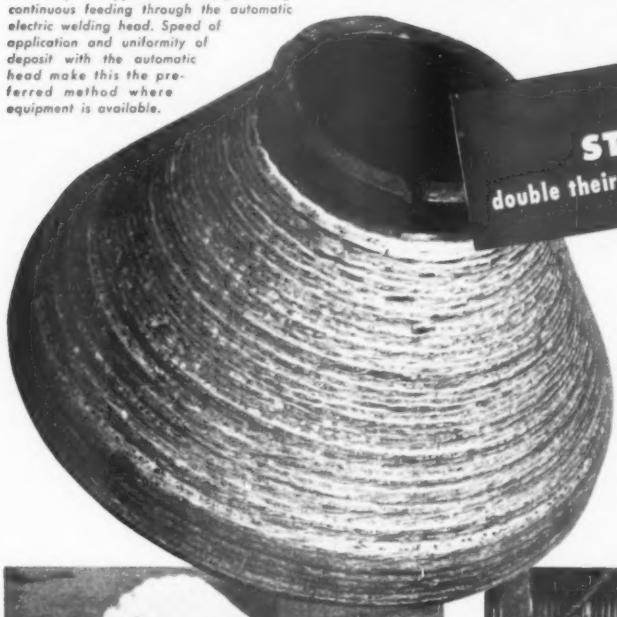
ROBINS CONVEYORS DIVISION **HEWITT-ROBINS INCORPORATED**

CRUSHERS!

Hard-face 'em MANUALLY or AUTOMATICALLY!

A finished crusher cone automatically hard-faced with a single layer of Stoody **121**. *This alloy is supplied in coils, permitting continuous feeding through the automatic electric welding head. Speed of application and uniformity of deposit with the automatic head make this the preferred method where equipment is available.*

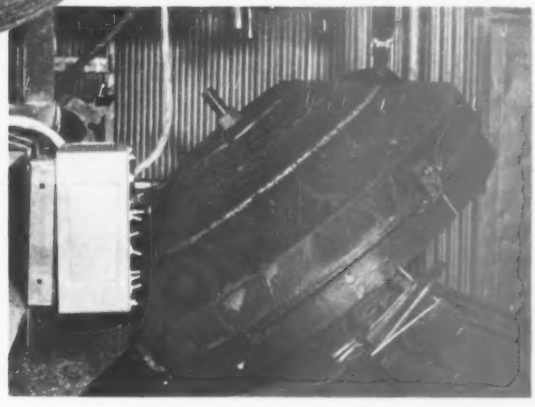
With either method STOODY ALLOYS double their life, increase operating efficiency!



To get the most out of your crushers they should be hard-faced when new with STOODY SELF-HARDENING **21** manually, or with STOODY **121** by the automatic head.

If crushers are worn within reasonable limits, the surface may be built up with STOODY MANGANESE and finished with STOODY SELF-HARDENING **21** or STOODY **121**, following the wear pattern. When crushers are worn too thin, rebuilding is not recommended. The use of Stoody Alloys cuts down-time, maintains uniform output and, if regularly rehard-faced, cones will last indefinitely.

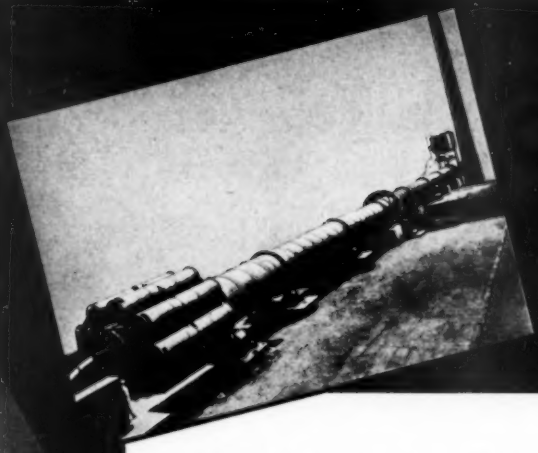
The new Self-Hardening **21** *offers excellent wear protection and is exceptionally fast and easy to apply. Coated or bare electrodes are for manual application with either A.C. or D.C. equipment.*



Where progressive circumferential beads are applicable the automatic electric welding head saves time and assures smoother deposits. This cone is being hard-faced with Stoody **121** *on an automatic machine.*

Your **Stoody Dealer is ready to help you on all wear problems. Ask him for recommendations and literature on STOODY ALLOYS.**

STOODY COMPANY
1129 WEST SLAUSON AVENUE, WHITTIER, CALIFORNIA

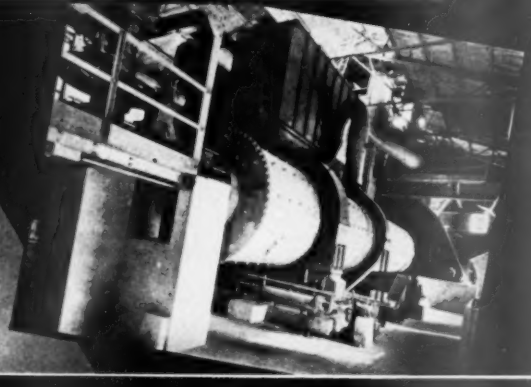


ROTARY KILNS

Machinery for Cement-Lime-Ore

In addition to a complete line of Rotary Kilns and Grinding Mills, F L. Smidth & Co. also manufacture Coolers, Pre-Coolers, Pre-Heaters, Recuperators, Air Separators, Agitators, Packers, Extractors, Feeders, Burners, etc. and their auxiliary equipment, for the manufacture of Cement, Lime, Ores, and Allied Products

GRINDING MILLS



F. L. SMIDTH & CO.

11 WEST 42ND STREET

CEMENT ENGINEERING
CEMENT MACHINERY

NEW YORK, N. Y.

"WE HEAR..."

March, 1949

A $41,858,000,000 budget for the fiscal year beginning July 1, 1949, has been submitted to Congress by the President. Estimates for public works total $2,959,168,844. Appropriations include $501,000,000 for federal aid to states for highways, $104,504,422 for the national airport program, $1,134,469,659 for water and power programs, $326,273,000 for atomic energy. Proposed housing expenditures total $388,000,000.

* * * * * * * * * * *

State constitutional amendments requiring that highway user taxes be used for highway purposes only are expected to be considered by at least ten more legislators this coming year. Twenty-one states already have similar amendments.

* * * * * * * * * * *

A plan to use a belt conveyor as a common carrier, like a railroad or trucking system, to carry cargo in two directions between Lake Erie and the Ohio River, was revealed in Cleveland recently. The proposed conveyor system would stretch a total of 130 miles (13 times longer than the longest belt conveyor built to date) and would handle up to 52,000,000 tons of bulk material per year--20,000,000 tons of coal going north; 32,000,000 tons of iron ore traveling south. The system would cost $210,000,000, or nearly three times the total business done by the entire heavy-conveyor industry in 1948, and would take two years to build. Object of the plan is lower freight costs. By using the system, an estimated $20,000,000 to $45,000,000 per year could be saved.

* * * * * * * * * * *

New homes are being marked down by builders in many cities that have seen rapid building since the war ended. Reductions being made on houses slow to sell are showing up most in the $12,000-$17,000 range.

* * * * * * * * * * *

Sharp increase was shown in highway expenditures by the nation's 37 largest cities during their fiscal years ending in 1947, according to a Department of Commerce report. Capital outlay on highways (principally new construction) was $83,000,000, jumping from $41,000,000 in 1946.

* * * * * * * * * * *

Despite talk of some lessening of pressure in the demand for steel within the next six months, ingots have been sold during the past few weeks for $115 per ton. Orders are for six months' delivery and for substantial tonnages.

* * * * * * * * * * *

Measurable gains in Europe already are visible on the production front, according to Engineering News-Record. During the third quarter of 1948, Marshall Plan factory and mine production was 10 percent above 1947 and almost equal to the 1938 rate. Excluding Germany, steel operations equalled the prewar high of 1937. Cement production outstripped prewar highs everywhere except in Italy and Allied Germany. Result of this increase in European construction activity will be a decrease in demand for U.S. construction materials and perhaps equipment.

* * * * * * * * * * *

The Nation needs more than 80,000 miles of new sewer lines and at least 12,000 new treatment plants to meet the problems of water pollution control, Maj. Gen. Philip B. Fleming, Federal Works Administrator, said recently.

WE HEAR

An employer cannot, in carrying out a court order to restore a veteran to his old job, deduct from back wages of the veteran the amount that he received as unemployment compensation under the GI Bill of Rights. A federal district court has decided that GI unemployment compensation is a gratuity, and may not be used as an offset against back pay owed by an employer for failure to reemploy a veteran under the Selective Service Act.

* * * * * * * * * * *

Expansion and replacement of plant and equipment accounts for more than half, or $16,800,000,000 of the estimated $25,400,000,000 spent by corporations in 1948.

* * * * * * * * * * *

A water suspension of minute particles of silica, prepared in such a way that the silica will not settle out, is being used to make a nonskid floor wax, a slipproof rayon weave, and a rubber adhesive by the DuPont Co. The material is said to not only behave like grains of sand, but also much like molecules, depending where it is used. The particles permeate a floor wax. In rayon, they coat each fiber. In rubber compounds, however, each particle reacts chemically with the rubber surrounding it, making the articles stiffer. It strengthens latex adhesives by reacting both with the latex and the material being bonded.

* * * * * * * * * * *

State highway construction during 1948 totaled $1,150,000,000, according to Commissioner Thomas H. MacDonald of the U.S. Public Roads Administration. Contracts awarded for federal and non-federal primary and secondary roads and urban extensions of the federal aid systems amounted to $746,000,000.

* * * * * * * * * * *

A new, low-cost lightweight roof plank, which promises to reduce building costs as much as 20 percent, has been announced as the first in a line of construction units to be molded from mineralized wood chips combined with cement. The planks are said to be fireproof and resistant to termites, moisture, fungus and rats, and are capable of withstanding live loads commonly imposed on regular concrete floors.

* * * * * * * * * * *

Freight carloadings continue to run 6 to 8 percent below a year ago. At the end of January they were down 8 percent.

* * * * * * * * * * *

The dollar value of new construction put in place took a seasonal slump from December to the end of January. Total new construction in January amounted to $1,261,000,000, down 9 percent from the $1,391,000,000 in December, but 9 percent above the January, 1948, total of $1,157,000,000, the Commerce Department reports.

* * * * * * * * * * *

A recent patent assigned to Socony-Vacuum Oil Co., Inc., relates to the use of lime in utilization of refining wastes in production of paint drying oils. The bottoms (near-tar) in Houdry and Thermofor catalytic cracking operations are hydrogenated and then chlorinated. This product is then dehydrochlorinated with quicklime at 105-110 deg. C. This oil is mixed with the conventional resins and oils for the preparation of varnishes.

* * * * * * * * * * *

Unemployment climbed to 2,664,000 early in January, 723,000 above early December and the highest since 1942, except only for March, 1946. The increase was double the normal amount for January.

THE EDITORS

"FORD F-8 Big Jobs outperform all other trucks in their class!"

Roadside Report

FORD TRUCKS

JAMES L. DIGGS

KINGMAN

ARIZONA

"MY BONUS BUILT Ford F-8 Big Jobs, averaging 46,000 lbs. gross, are outperforming all other trucks in their class," reports Mr. James L. Diggs. "Gas mileage is 6 miles per gallon. The engine on one F-8 has never felt a wrench, except for changing one set of points and two fan belts. My run takes us over a mountain range and through the intense heat of the Colorado River Valley."

Mr. Diggs is one of many big-time haulers who give the Ford Big Jobs a great big hand. Owners report the 145-horsepower engine outperforms anything in its class. They offer plenty of proof that it outsaves many engines much smaller in size. Drivers report that the new Ford Million Dollar Cab can't be beat for comfort. Ford Big Jobs for '49 are Bonus Built . . . like the other 139-plus models in the full line of Ford Trucks. Bonus Built is the superstrong construction that contributes to long truck life. Life insurance experts prove Ford Trucks last longer.

FORD 1949 *Bonus Built* TRUCKS 1949

BUILT STRONGER TO LAST LONGER

USING LATEST REGISTRATION DATA ON 5,444,000 TRUCKS, LIFE INSURANCE EXPERTS PROVE FORD TRUCKS LAST LONGER!

ONLY THE FORD BIG JOB HAS ALL THESE FEATURES!

- ★ **New 145-h.p. Ford V-8 engine for top performance.**
- ★ **Ford exclusive concentric dual-throat carburetor for more power, more economy.**
- ★ **New heavy duty 5-speed transmissions for operating flexibility.**
- ★ **Big Ford power-operated brakes for sure-footed stopping; rear 16-inch by 5-inch on the F-8.**
- ★ **Ford Super Quadrax 2-speed axle with vacuum shift for performance flexibility in Model F-8 (single speed axle also available); single-speed Quadrax Hypoid Axle in Model F-7.**
- ★ **Large diameter (10-inch) wheel bolt circle with 8 studs to allow for extra-strong hub construction.**
- ★ **Million Dollar Cab with Ford Exclusive Level Action suspension for greater driving comfort.**
- ★ **Nationwide service from over 6,400 Ford Dealers.**
- ★ **Ford Bonus Built construction for long truck life.**

Gross Vehicle Weight Ratings: F-8 up to 21,500 lbs., F-7 up to 19,000 lbs. Gross combination ratings: F-8 up to 39,000 lbs., F-7 up to 35,000 lbs.

STA-SMOOTH EVEN-SURFACE SCREENS

Order Ludlow-Saylor *Engineered* Hook Strips for tensioning vibrator-screen decks. They transmit to every tensioned wire an equal share of uniform vibration, evenly distributed throughout the entire screen area. They make screen decks last longer—step up screen capacities—are easier to handle—quicker to install—need fewer adjustments and renewals.

The LUDLOW-SAYLOR WIRE CO.
614 S. Newstead Ave., St. Louis 10, Mo.

Send Catalog No. 90 on INDUSTRIAL SCREENS, WIRE CLOTH and WIRE FILTER FABRICS.

TO .....

FIRM .....

STREET .....

TY-ZONE-STATE .....

LUDLOW SAYLOR

★ ★ ★ Editor's Page

Merchandising Must Carry the Ball in 1949

ATTENTION that was given to marketing activities at every one of the recent national conventions of the aggregates, concrete masonry and ready-mixed concrete industries was significant to us and should be taken by all producers as a warning signal that must be heeded.

Industry associations realize more than many of their scattered members do that the inflationary boom is on the wane, that price adjustments are taking place, that a buyers' market is heralding the return of competition, and they know that the very survival of many of their members will soon depend upon immediate and intelligent adjustment to changed conditions.

Economic conditions continue healthful for the long pull but a shakedown is already started which will determine the fittest individual businesses to weather the transition to competitive merchandising with sufficient success to keep their plants producing at the high levels necessary for profitable operation.

Competition and New Companies

Competition for sales marks the return to some form of normalcy at least in doing business, which always has been a good thing for American enterprise, but will come as a shock to companies that have been lulled into complacency during the easy-selling years which have been marked (or marred) by inefficient production and extravagance.

The test, however, will be hardest on the many hundreds of newcomers in the rock products and concrete products industries to whom any selling at all will be a novel experience. Their right to "belong" permanently in the industry, even though they have productive genius, a better than average product and other capable attributes, will be determined by their ability to hold business and by their resourcefulness in creating and developing new business. They will soon learn, as many of us have, that we are all in the business of selling.

Trade associations in these industries have performed outstanding services for their members; among them being the development of data and facts from research and other activities which are invaluable merchandising aids of benefit to non-members as well as those who support their efforts. But trade associations serving localized industries such as these cannot perform the merchandising functions required in each localized area. They have sounded a timely warning, however, and those who can profit most by this advice and who could capitalize to the fullest extent now from unified efforts, are mainly concerns which have gone along nicely and alone during the years when anyone could get business. We suggest that these concerns join their industry association as the first low-cost investment in adapting their business policies to competitive merchandising. Future business will depend more than ever on scientific knowledge stemming from research and on good public relations.

Selling Tools

Merchandising must be more than promotional in industries such as these; it must be educational and be adapted to each particular area. The first step to be taken, and that without delay, is market analysis and evaluation of all prospects throughout the economical shipping range from a producing plant. Sales development then follows.

Supplementary to actual selling of the individual merits of a product, why not employ all the devices that have proved successful to so many others in the industry? Among them are advertising of all types, direct mail, films, trade marks, demonstrations, novelty gifts and every and all other means to promote and keep the product and company before the prospective purchaser. Simple sign boards that lead the way to a producing plant will produce sales; yet, we as editors rarely have found direction signs in our travels and sometimes the plants themselves have been impossible to locate. Why keep the location of a plant secret? Show everybody how to get there.

This is just one instance to illustrate how derelict the industry has been in its sales efforts. We need only cite the agricultural limestone industry for another glaring example. To think that a large proportion of an industry was on the verge of going out of business just because the government temporarily suspended soil conservation payments to farmers, as it did in 1947, is almost unbelievable. It is a poor commentary on educational merchandising, that the industry had not entrenched itself through acceptance of its product when there is so much evidence that the farmers have profited immensely in increased yields through soil liming. The farmers have more money than ever before to spend. They need a tremendous amount of building and should be a focus for the concrete industries.

Bror Nordberg

PLUS Power . . Speed . . Mobility

FEATURING . . .

1½ Cu. Yd. Capacity
Hydraulic Bucket Control
Hydraulic Down-Pressure
Rear-Wheel Power Steering
Automatic Tip-Back Bucket
Four Forward Speeds
2 to 16 mph
Four Reverse Speeds
3 to 24 mph

Write for Free Catalog

on the Model HM or on other sizes of Hough Payloaders—the 1¼ cu. yd. Model HL, the ¾ cu. yd. Model HF, the 10½ cu. ft. Model HA.

Here is an entirely new experience in earthmoving — an entirely new conception of the work capacity and job capacity of a rubber tired tractor shovel. Here is an entirely new tractor shovel—revolutionary in design—revolutionary in performance.

Big and powerful, the 1½ Yd. Model HM PAYLOADER provides tremendous digging power and ground-gripping traction for tough going in rock, sand, mud, muck or *any* terrain. With 4-Wheel Drive on large rubber tires it provides traction comparable to a crawler tractor—plus more speed, greater mobility, easier maneuverability and *far less maintenance expense.*

Compact design, short wheel base and power boosted rear wheel steering enable the HM to operate in close quarters. It has four speeds in either direction and quick acting forward-reverse control. Double acting finger-tip hydraulic control raises — lowers — dumps and closes the bucket . . . provides powerful down pressure for tough digging. Get the complete story on this new PAYLOADER from The Frank G. Hough Co., 705 Sunnyside Avenue, Libertyville, Illinois.

SAY "HUFF"

HOUGH
PAYLOADER
Manufactured by THE FRANK G. HOUGH CO.

Rocky's NOTES

Nathan C. Rockwood

Industry Becoming Co-operative Enterprise

TWO INFLUENTIAL GROUPS of voters are especially favored in our present political economy. They are of course the labor group or bloc and the farmer bloc. Both are recipients of special federal government subsidies in one form or another. Both groups, unwittingly perhaps, are thus helping to undermine and destroy our system of competitive enterprise.

By evolution, the greatest part of the income from this industrial enterprise today goes not to individual "capitalists," but to insurance companies, to pension and welfare trust funds and to the various federal, state and local governments. In short it is already dedicated to "social service." Frequently overlooked is the fact that these services are but coöperatives, entirely dependent on the productiveness and earnings of business enterprise; and that a dollar is money and as such an exchange medium only because it is in effect a receipt for goods produced or services rendered which, even though remotely, are presumably rendered to facilitate production of tangible goods.

Those who understand the meaning of money know that the dollar buys less and less tangible goods, as more and more of it is required to pay for this intangible "overhead." The reason why socialist or communist "coöperatives" can not compete successfully with industry conducted for profit is because in seeking profits management must always be alert to reduce overhead, or unproductive use of labor and of money, while the public's business is designed and conducted to support the greatest possible overhead.

Social Benefits Without Socialism

There probably are intellectuals sincere in their belief that socialism is the cure for all ills and maladjustments in human society. But it is hard to understand how any one can fail to see that our present system is providing more and more the benefits claimed for socialism with the unmeasurable but immense additional benefits of a management derived from and still motivated by necessity for profits. Too many people believe that the chief function of government is to provide work; overlooking that the ultimate object of all work is to produce goods, or services designed to facilitate the production of goods. The more efficient the work or the workers, the more goods or wealth produced and the more to share.

Under a socialist government, every one can be put to work all right, but the sum total of their production, even with longer working hours, is less because efficient management is lacking. We merely see another demonstration of the ancient proverb that "what is everybody's business is nobody's business." If we can have abundant production without efficient, capable management, all history has failed to provide an example. The object of good living is not work of and for itself, but work that provides directly or indirectly the most of things required for good living, with time to enjoy them because of the least work to attain them. That is what this country has demonstrated for the benefit of the rest of the world as well as for our own people.

Gradual Transition of Ownership

It is obvious that capitalism of tomorrow will not be the same kind of capitalism as of yesterday. Organized labor is adopting plans and policies that will bring to it, or to its leaders, the problems of large scale capital management, which hitherto have been the province of financiers, or professionals in the art or science of managing money or capital. Union pension and welfare funds must be invested and managed, and in a few instances unions are also engaging in coöperative merchandising enterprises, of the kind that farm organizations have long been promoting. All these developments should result in labor's obtaining a better understanding of the functions of capital in a private enterprise economy.

It will learn that all "investment" does not necessarily result in profits. If we remember correctly, one or more of the railway brotherhoods lost millions of dollars in the collapse of the Florida land boom some 25 or 30 years ago because the union's leaders were not wise enough in the management of trust funds to distinguish between speculation and investment.

It will be natural, when unions come to invest their trust funds, to put them into securities of industries in which they work and have some intimate knowledge of. An interesting example of what may be in store for American industry is the near bankruptcy of the old and honored Waltham Watch Co., Waltham, Mass. The threatened closing of the plant resulted in an appeal to the Reconstruction Finance Corporation for a large loan (which means a tax on all of us). In addition, the president of the American Watch Worker's Union induced 820 members to subscribe $318,000, and the union itself has established a plan to finance the purchase of company stock by its members to the extent of $1,000,000.

All this is as it should be; it has been done before in smaller and little known organizations, and hence without much publicity. The president of the union told a meeting of 1200 people: "The raising of the American standard of living has all but wiped out the wealthy class that used to supply risk capital. Now risk capital must come from the great middle class." If all union labor leaders could have an equally clear view of the need and risks of capital investment, we would believe that the future of the American enterprise system is secure.

Incidentally, these difficulties stem from competition of imported Swiss watches coming into this country under one of many reciprocal trade treaties. Probably, we shall soon have similar examples. The President insists that American labor be paid still higher wages with more social benefits. At the same time the government is compelled to subsidize the American merchant marine, for example, because it is hopelessly out-classed in efficiency, cost and quality of service by maritime nations operating ships given to them by ourselves. The government also is trying to get Americans to invest in foreign enterprises because of "favorable conditions"; in other words cheaper and possibly more willing labor. The products would presumably be imported into this country as automobiles have been imported from Great Britain.

All this is good business, because it is the acme of foolishness to be sending our resources abroad to build up industrial competition and refusing anything in return. But how is this going to square with labor unions' drive for higher costs for things that can be made here? Sometime, somewhere, someone in authority must have the "guts" to tell both American farmers and labor that the attempt to shield themselves from world competition, by means of subsidies at the expense of all of us, will prove as costly and futile, as high protective tariffs, which were subsidies to industry. Now the very government which condemns protective tariffs is applying the same thing in principle to labor and farm groups.

greater economy

more production

it pays

eplace

h these explosives

better breakage

More and more, Hercules Gelamites* and Hercomites* are replacing older-type explosives. There's a reason. They are more economical to use than the earlier extra dynamites and gelamites. The handy Tamptite cartridges made in all sizes regularly used for mining make "slitting" unnecessary and save powder. For further information, write for new booklet, "Hercomites and Gelamites for Lower Blasting Costs."

HERCULES POWDER COMPANY

946 King Street, Wilmington 99, Delaware

LABOR RELATION TRENDS

Supreme Court's Decision on State Right-to-Work Laws

By NATHAN C. ROCKWOOD

BEFORE this is published the decision of the United States Supreme Court, upholding the right of state legislatures to adopt right-to-work laws, may be nullified by revision of the Taft-Hartley Act. In that respect the decision of the Court in the cases involving the state laws or constitutional amendments of North Carolina, Nebraska and Arizona may be disappointing to those who had hoped to see a clear-cut definition of fundamental individual human liberty established as a constitutional as well as a divine right.

After fighting the enforcement of these state laws through the Supreme Courts in the various states, the labor union attorneys carried their pleas to the U. S. Supreme Court on the grounds that these laws violated some of the constitutional rights of union members. Their case was obviously a weak one, for they lost in all state court cases on the same arguments. In every case the courts pointed out their self-contradictory contention that the prohibition of so-called "yellow-dog" contracts was constitutional while the complementary prohibition of union-shop contracts was unconstitutional. There were other obvious inconsistencies in the labor union arguments, of which the following, in the words of the U. S. Supreme Court decision, is typical:

"Because the outlawed contracts are a useful incentive to the growth of union membership, it is said that these laws weaken the bargaining power of unions and correspondingly strengthen the power of employers. This may be true. But there are other matters to be considered. The state laws also make it impossible for an employer to make contracts with company unions which obligate the employer to refuse jobs to [other] union members. In this respect, these state laws protect the employment opportunities of members of independent [outside] unions. This circumstance alone, without regard to others that need not be mentioned, is sufficient to support the state laws against a charge that they deny equal protection to unions as against employers and non-union workers."

Old Doctrines Discarded

In reviewing the history of court decisions, which at first upheld the "yellow-dog" contracts as constitutional, and the subsequent striking down of this and other state laws which were alleged to violate the "due process" provision of the U. S. Constitution, the Court said in the present decision: "This Court, beginning at least as early as 1934, has steadily rejected the due process philosophy [previously enunciated]. In doing so it has consciously returned closer and closer to the earlier constitutional principle that states have power to legislate against what are found to be injurious practices in their internal commercial and business affairs, so long as their laws do not run afoul of some specific federal constitutional prohibition, or of some valid federal law. Under this constitutional doctrine the due process clause is no longer to be so broadly construed that the Congress and state legislatures are put in a straight jacket when they attempt to suppress business and industrial conditions which they regard as offensive to the public welfare."

This conclusion is very generally interpreted by legal talent that should be qualified to judge, as specifically opening the way for any and all kinds of labor-management law that the Congress may consider it desirable to adopt, without danger of its being declared unconstitutional. The rest of the decision also makes it clear that the Court considers this is a matter of policy to be dealt with by legislative action and not by the courts. The state legislatures can do likewise so long as they are permitted to do so under the Taft-Hartley Act. Under a restoration of the Wagner Act, or with the union- and closed-shop provisions stricken from the Taft-Hartley Act, a federal law permitting closed-shop contracts would render such state laws as those passed upon by the U. S. Supreme Court practically meaningless, except as they might apply to some few employes of local business which could not possibly be construed as "affecting" interstate commerce.

There is one saving feature of both the original Wagner Act and the Taft-Hartley Act. That is, while both compel the employer to bargain collectively with his employes, neither compels the employer to accept a closed-shop or a union-shop contract, if he does not desire to do so. In the Wagner Act he was permitted to make either kind of a contract; in the Taft-Hartley Act he was permitted to make a union-shop contract under specified conditions, and if there were no state laws forbidding such contracts, but he was prohibited from making closed-shop contracts under any conditions.

There is no unanimity among employers on the closed-shop issue. Employers frequently have accepted closed-shop contracts as the easiest way to keep peace or reduce strife in their organizations, obviously for selfish reasons, without regard to the fundamental rights of the individuals concerned. So far as we know, a case under the Wagner Act raising this fundamental issue of principle never arose; and in over 90 percent of the elections for union shop under the Taft-Hartley Act, the unions won the election.

Nevertheless, it would seem that in spite of the interpretation put on the U. S. Supreme Court's decision, a case could arise under a restored Wagner Act, in a state that had a right-to-work law, in which an individual or a group of individuals might find substantial legal grounds for an appeal to the Supreme Court. Were such individuals deprived of their means of earning a living by arbitrary expulsion from a union, or by refusal of a union to accept them as members, or their refusal to join a union, it seems to us they would have a legitimate claim that their state and federal constitutional rights had been abrogated by an unconstitutional or invalid federal law. Certainly such a case would result in so much publicity as to cause a change in the federal law, even if, as the U. S. Supreme Court said in this case, it is not the Court's function to change or make laws by interpreting public opinion.

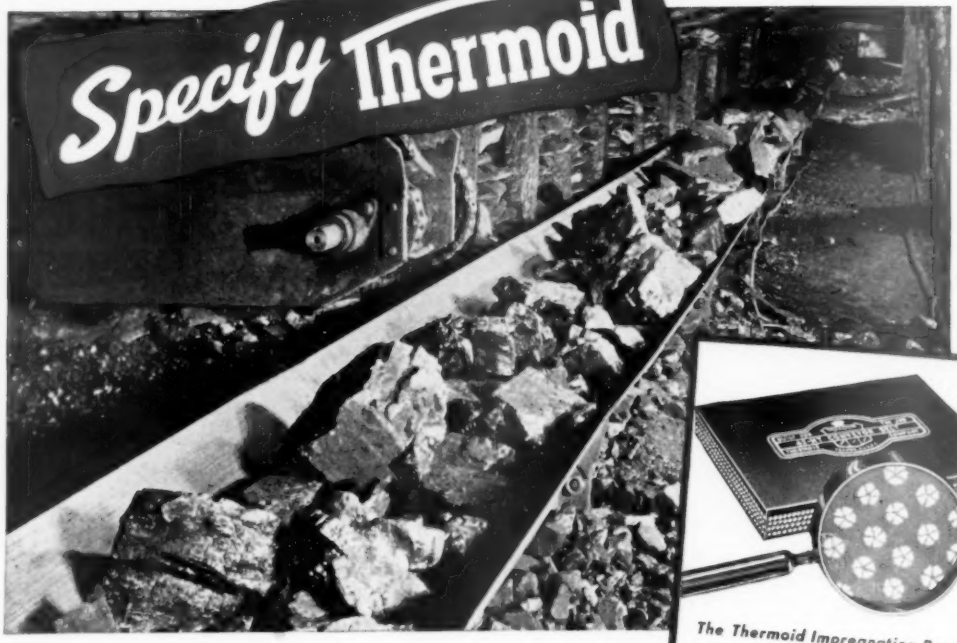
Philosophical Essay

Mr. Justice Frankfurter, in his concurring opinion, presents a philosophical discussion of the whole field of labor unionism since "the coming of the machine age," in which he quotes from Laski (the British socialist) and the late Justice Brandeis. This discussion might be interpreted as a warning to labor union leaders not to abuse the power that they may now have to obtain legislation too favorable to them at the expense of the public welfare. For example, one paragraph from his concurring opinion reads:

"If concern for the individual justifies incorporation in the Constitution itself [of] devices to curb public authority, a legislative judgment that his protection requires regulation of the private power of unions cannot be dismissed as insupportable. A union is no more than a medium through which individuals are able to act together; union power was begotten of individual helplessness. But that power can come into being only when, and continue to exist only as long as, individual aims are seen to be shared in common with other members of the group. There is a natural emphasis, however, on what is shared and a resulting tendency to subordinate the inconsistent interests and impulses of individuals. From this, it is easy transition to thinking of the union as an entity having rights and purposes of its own. An ardent supporter of trade unions who is no less a disinterested student of society has pointed out that: "As soon as we personify an idea, whether it is a country or a church, a trade union or an employers' association, we obscure individual responsibility by transferring emotional loyalties to a fictitious creation, which

(Continued on page 122)

Specify Thermoid



The Thermoid Impregnation Process insures a deeper penetration of rubber between the threads of the yarn, which encases each individual strand with protective rubber. The rubber acts as a sheath between the strands and prevents the destructive abrasion action as the product is flexed in use. To obtain the required rubber penetration, the twist of the yarn must be to exact specifications. With the yarn twisted too tightly, proper penetration of the rubber compound is impossible. This condition produces abrasion, causing premature failure. On the other hand, if the yarn is twisted too loosely, the product lacks tensile strength. Thermoid has discovered the optimum twist of the yarn which assures maximum rubber penetration and greatest strength. The development of Thermoid Impregnation Process is another step forward in Thermoid's planned program of product improvement, assuring maximum service and lower operating costs to industry through the use of Thermoid Industrial Rubber Products.

Thermoid Impregnation Process Assures Longer Conveyor Belt Life

Thermoid Conveyor Belts are Built for the Job!

For over 68 years, Thermoid has worked with quarry operators to develop rubber products to withstand the rugged duty and extremes of weather encountered in quarrying and construction operations. The result—a complete line of Thermoid Conveyor Belts for every quarrying requirement.

Your nearest Thermoid distributor can service your requirements . . . or if you prefer, write us of your problem and we will furnish full details.

It will pay you to *Specify* Thermoid!

Thermoid Quality Products: Transmission Belting • F.H.P. and Multiple V-Belts • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Molded Products • Industrial Brake Linings and Friction Materials.

Thermoid Company

Main Offices and Factory • Trenton, N. J., U. S. A.
Western Offices and Factory • Nephi, Utah, U.S.A.
Industrial Rubber Products • Friction Materials • Oil Field Products

the *Personal Side* of the news

Operating Manager

PAUL F. MAURER has been appointed operating manager of the Bath, Penn., plant of the Keystone Portland Cement Co., Philadelphia, Penn., assuming the duties of Howard H. Leh who passed away on December 5, 1948. A graduate engineer at the Carnegie Institute of Technology, Mr. Maurer worked for a while with various coal mining operations in western Pennsylvania before entering the field of portland cement and other rock products. As assistant to chief engineer of the Standard Lime and Stone Co., Baltimore, Md., Mr. Maurer was engaged in engineering, construction, and operation of many phases of the rock products industry, including crushed stone, lime, portland cement, magnesia refractories, and rockwool insulation. After more than 17 years in this work, during which time he designed and erected plants in West Virginia, Ohio, Illinois, and other states, he accepted appointment as general superintendent and chief engineer of the Bath plant under the leadership of the late Howard H. Leh.

Paul F. Maurer

Talc Concern President

E. W. MAGNUS of Waterbury, Vt., has been elected president of the W. H. Loomis Talc Corp., Gouverneur, N. Y. Donald Hagar of Zanesville, Ohio, was elected executive vice-president. Other officers are R. Frank Atkinson, vice-president and general manager; A. Prescott Loomis, treasurer; J. A. Baumer, secretary; and Mrs. Margaret L. Storie, assistant secretary and assistant treasurer. The executive committee includes J. T. Smith, Burlington, Vt.; Donald Hager and E. W. Magnus. A. Prescott Loomis was placed in charge of personnel and public relations.

Ohio Turnpike Speaker

J. S. KENNEDY, field engineer for the Portland Cement Association, was one of the speakers at the recent meeting of the Rotary Club in Youngstown, Ohio, at which plans were presented to extend the Pennsylvania Turnpike into Ohio. Ernest Green, chairman of the Ohio Turnpike Committee; H. G. Wood, state paving engineer for the Portland Cement Association; and W. J. Hagenlocher, secretary, were among the speakers. A movie, "Expressways," was shown at the meeting.

Named Vice-President

CHARLES MCCUMSEY, formerly vice-president of Standard Research Consultants, Inc., Chicago, Ill., has been appointed executive vice-president and general manager of The Carney Co., Inc., Mankato, Minn., according to an announcement by Harry E. Carney, Jr., president. During the war Mr. McCumsey served with the War Department as chief war contracts renegotiator, attached to the office of the Missouri River Division Engineer under Major Gen. Lewis A. Pick. From 1934 to 1942 he was president of the Federal Land Bank of Omaha. Other officers of the company are W. B. Lee, vice-president and treasurer; K. A. Gollmar, secretary; T. P. Walters, vice-president in charge of production, and G. F. Kiewel, who was elected controller.

Charles McCumsey

Heads Limestone Firm

A. J. CAYIA, vice-president and general manager of the Inland Lime and Stone Co., Manistique, Mich., has been elected president of the company.

A. J. Cayia

Mr. Cayia has been a member of the firm since 1928, when he started to develop the quarry and construct the plant at Port Inland, Mich. A graduate of the University of Michigan with the degree of bachelor of engineering, he worked for the M. A. Hanna Co., as mechanical engineer until 1918, when he was appointed assistant consulting engineer in Cleveland. In 1923 he went to Wakefield, Mich., as assistant superintendent of the Wakefield mine, and became superintendent in 1925.

Advertising Manager

MILTON E. HLAVA, assistant advertising manager of the Portland Cement Association, Chicago, Ill., has been promoted to advertising manager. Before joining the Association, Mr. Hlava had been on the editorial staff of Rotarian magazine, had done editorial work and market research studies for the Chicago Daily News, and had been in public relations work with Carl Byoir & Associates.

Institute Directors

DR. GEORGE E. ZIEGLER has been appointed director of the Midwest Research Institute, Kansas City, Mo., and DR. CLAYTON O. DOHRENWEND has been named assistant director of the Institute. Dr. Ziegler has been acting chief administrator since the resignation of Harold Vagtborg about six months ago. Dr. Dohrenwend has been research consultant since 1946.

Appointed Geologist

LOUIS C. BALL, formerly with The Permanente Metals Corp. (Henry J. Kaiser affiliate), has been appointed geologist for the Standard Gypsum

Louis C. Ball

Co., Oakland, Calif., another Kaiser operated company. Following graduation from the University of Nebraska in 1940, Mr. Ball was employed as a geologist by the Aluminum Company of America until 1944. He served as a naval officer for two years, seeing action during the Okinawa campaign and the subsequent minesweeping in Japanese waters. In 1946 he joined The Permanente Metals Corp. and was engaged in the exploration of bauxite land under option in Surinam, Dutch Guiana.

Committee Chairman

H. G. "MIKE" COLLINS, manager of safety and welfare, Lehigh Portland Cement Co., Allentown, Penn., has been appointed to the Cement and Quarry Section Executive Committee for 1948-49 as chairman of the Visual Aid Committee, National Safety Council. He succeeds F. L. Maus, who has resigned to accept a position with the Carnegie-Illinois Steel Corp. at South Chicago, Ill. Mr. Collins has spent much time in the development of a visual education program for his plants, and has authored, directed, edited and produced a sound slide-film which has been used with marked success in an indoctrination program for new employes.

Awarded Certificate

EDWARD H. RAFF, vice-president and plant manager of The Diamond Portland Cement Co., Middle Branch, Ohio, was presented with a "Certificate of Public Service" by Gavin K. MacBain, treasurer of Brand Names Foundation, Inc., New York, N. Y., at the Foundation's Golden Anniversary dinner in Cleveland. This certificate, one of 26 awarded for brand names in the northern Ohio area, was presented in recognition of the brand name "Diamond" which has identified portland cement made by this company since 1892.

P.C.A. Engineer

GEORGE W. VAUGHT, instructor in the Department of Applied Mechanics at the University of Kansas, has been appointed structural engineer for the Portland Cement Association in Ohio, where he will be available to consult and assist in structural design and various uses of concrete. Mr. Vaught, before teaching at Kansas, spent six years with Lockheed Aircraft Corp. at Burbank, Calif. He was also associated with a consulting engineering firm in Dallas, Texas.

Association President

J. P. EYRE PRICE, vice-president, Wyoming Sand and Stone Co., Scranton, Penn., has been elected president of the Bituminous Concrete Association, Norristown, Penn. Frank Webb of the Interstate Amiesite Co., Wilmington, Del., was named vice-president, and Harlan Conly, Asphalt Paving and Supply Co., Norristown, secretary-treasurer. Members of the board of governors are Samuel Irwin, Highway Materials, Inc., Bridgeport, Penn.; Alvan Overdorf, Quaker Sales Corp., Johnstown; Joseph L. McGlynn, Union Paving Co., Philadelphia; and J. H. Watson, Cambria Slag Co., Youngstown, Ohio.

The purpose of the association is to encourage, aid and protect members in the production of bituminous concrete paving mixtures; to foster, secure and maintain cooperation, harmony and goodwill among the producers; to gather and disseminate practical and useful information, and to develop and maintain cooperation between members of the association and representatives of the federal and state governments.

J. P. Eyre Price

Correction

IN THE JANUARY ISSUE, p. 61, the item concerning K. B. Lucas should have mentioned him as a representative of the Portland Cement Association. There is no National Association of Cement Manufacturers.

Gavin K. MacBain (left) presenting certificate to Edward H. Raff

OBITUARIES

Arthur J. Boase, manager of the Structural and Railways Bureau of the Portland Cement Association, Chicago, Ill., and an internationally known authority on reinforced concrete design, died of a heart attack in his office on February 9. He was 56 years old. Mr. Boase joined the Association in 1930 as regional structural engineer in the Philadelphia district. A civil engineering graduate of the University of Colorado, Mr. Boase later received his master's degree from the University of Pennsylvania and spent his entire professional life in structural design work. After completing his college work, Mr. Boase designed dams and tunnels in the Rocky Mountain region for eight years, principally for the Boston Colorado Power Co. Then for three years, as manager of the Fair Engineering Co. in Denver, he worked on the design and construction of reinforced concrete bridges in Colorado. He served on the staff of the civil engineering department of the University of Pennsylvania, and later was appointed professor of civil engineering at Pennsylvania Military College prior to joining the Association.

At the time of his death, Mr. Boase was chairman of the Executive Committee of the Structural Division of the American Society of Civil Engineers and had served as a member of this committee since 1944. He was also a director of the American Concrete Institute. He served as chairman of both the A.C.I. Building Code Committee and the A.S.C.E. Committee on Masonry and Reinforced Concrete. He was also a member of the Reinforced Concrete Research Council and the Joint Committee on Standard Specifications for Cement and Reinforced Concrete and author-chairman of the A.C.I. publication "Reinforced Concrete Design Handbook."

Samuel L. Barnes, a director of the Pioneer Sand and Gravel Co., Seattle, Wash., died recently after an illness of two weeks. He was 63 years old. Mr. Barnes was associated with the Superior Portland Cement Co. from 1908 until his retirement as secretary in 1926.

Edward E. Klooz, former chemist for the Grasselli Chemical Co., Youngstown, Ohio, died January 24. He was 80 years of age. Mr. Klooz had been president of the Mahoning Valley Mortgage Co., Youngstown, since 1942. A graduate of the Case Institute of Technology in the class of 1891, he spent a year in the iron mining region of northern Michigan. He went to Youngstown in 1898 as manager of the cement department of the Brier Hill Iron and Coal Co. From 1909 to 1929 he was head of the Portage Silica Co. and its successor, Silica Corp.

Reuben J. Schumacher, former chief engineer and manager of operations of The Kelly Island Lime and Transport Co., Cleveland, Ohio, passed away on January 26. He was 56 years of age. A native of Marblehead, Ohio, Mr. Schumacher was graduated from Ohio State University in the class of 1916. He was chief engineer and manager of operations for The Kelley Island Lime and Transport Co., for 25 years, resigning in 1942 to accept a position as chief of the development department of the Budd Wheel Co., Detroit, Mich. In 1947, he opened an engineering office in Toledo, under the name of Basic Engineering Associates, and served the rock products industry in consulting work. He was a member of the American Institute of Mining and Metallurgical Engineers and of the Society of Mechanical Engineers.

J. Morley Zander, secretary and general manager, The Saginaw Brick Co., Saginaw, Mich., died unexpectedly of a heart attack at his home in Saginaw on January 11. Mr. Zander was best known to his many friends as a past-president of, and, for many years up to the time of his death, as secretary and treasurer of the Sand-Lime Brick Association, and its successor, the Autoclave Building Products Association. Mr. Zander was a native of Michigan and his earliest experience in the industry was with a local coal mining operation. Subsequently, he was with the Jackson and Church Co., Saginaw, the earliest American manufacturer of sand-lime brick plant equipment. Through this experience he became identified as an operating man and engineering consultant in the sand-lime brick industry and the high-pressure steam curing concrete products industry until his passing. At the time of his death he was busily engaged in working out a program for the annual convention of the industry at Detroit, Mich., January 27, 28 and 29. He was 67 years old.

J. Morley Zander

E. G. Lewis

E. G. Lewis, who for nearly 20 years had been manager of the Eastern district sales office of Bucyrus-Erie Co., South Milwaukee, Wis., died recently at his home in Jackson Heights, Long Island, N. Y. He was 77 years of age. Mr. Lewis had been associated with the company since 1912. He was formerly manager of the Chicago district office, and was closely identified with the development of the company's excavator business in the anthracite coal stripping fields of Pennsylvania, the cement quarrying industry of Pennsylvania and the stone quarrying industry of the Eastern states. He was active in the affairs of the National Crushed Stone Association, took a leading part in the formation of the Manufacturers' Division, and was chairman of the Division in 1929.

Alfred B. Trow, retired manager of the Erie Sand and Gravel Co., Erie, Penn., died January 6 after a brief illness. He was 77 years of age. Mr. Trow had been connected with the company for 30 years before his retirement in 1936.

James Mason Reynolds, assistant general manager of the Queenston Quarries, Ltd., St. Davids, Ont., Canada, died January 22 at the age of 42. Mr. Reynolds had been associated with the company for 24 years.

Walter T. Rader, vice-president and sales manager of Barnes and Cone, Inc., Syracuse, N. Y., passed away on January 12.

Haven T. Jackson, superintendent at the Pixley, Mo., plant of the Stewart Sand and Material Co., Kansas City, Mo., died January 18 at his home in Independence. He was 52 years old.

John F. Marnell, office manager, Orange Quarry Co., West Orange, N. J., died of a heart attack in Hollywood, Fla., on January 25. He was 53 years of age.

WHY HAVE RUST IN DRILLS?

DRILLS LUBRICATED WITH TEXACO ROCK DRILL LUBRICANTS EP ARE FULLY PROTECTED

Rust is a constant threat to drill operating efficiency — and a common cause of high maintenance cost. *Texaco Rock Drill Lubricants EP* protect against these dangers whether your drills are running or idle.

But rust prevention is only one job. *Texaco Rock Drill Lubricants EP* do many others. Their high film strength and adhesiveness protect moving parts against wear. They lubricate effectively even under extremely wet conditions. They resist oxidation and flow readily at all operating temperatures.

Texaco Rock Drill Lubricants EP meet the exacting specifications of leading rock drill manufacturers and the Compressed Air and Gas Institute.

Let a Texaco Lubrication Engineer show you how effective lubrication can assure you longer drill life, faster drilling and lower maintenance costs. Just call the nearest of the more than 2300 Texaco Wholesale Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

For greater compressor efficiency, keep valves clean, rings free, air lines clear by lubricating with *Texaco Cetus, Alcaid or Algol Oils*. For heavy-duty service and wet conditions, use *Texaco Regal Oils (R & O)*. Your Texaco Lubrication Engineer will recommend the ones best suited to your requirements. • Keep your hydraulically-operated construction equipment working more efficiently — systems free of rust and sludge — by using *Texaco Regal Oils (R & O)* as the hydraulic mediums.

TEXACO

TEXACO Lubricants and Fuels

Tune in . . . TEXACO STAR THEATRE presents MILTON BERLE every Wednesday night. METROPOLITAN OPERA broadcasts every Saturday afternoon.

INDUSTRY *news*

Reorganize, Expand Sand and Gravel Co.

J. A. WOODHALL, vice president and general manager of the New London Sand & Gravel Co., near Willmar, Minn., has announced an expansion program which will necessitate the reorganization and recapitalization of the present company. The new corporation, to be known as the New London Materials & Construction Co., will have a capitalization of $500,000, and in addition to the present sand and gravel business, will enter the general construction field, and also manufacture and sell all types of concrete products.

Loren Smithson, plant superintendent, has been named manager of the aggregate division of the new corporation, and Gerald Zaske, chief mechanic, also will assume the duties of plant foreman. J. F. Richards will become manager of the construction division.

Seek Steel Scrap

INDUSTRIAL FIRMS are being urged to turn over all steel scrap to the Industrial Steel Scrap Drive. According to Secretary of Commerce Charles Sawyer, the scrap is needed to maintain steel mill capacities and to build an emergency stockpile.

Industries are asked to investigate their inventories of obsolete machines, and to scrap and sell those which are not absolutely necessary for conducting their operations. All scrap iron and steel contributed will be paid for at current price levels through existing salvage channels.

During 1947 the iron and steel industry consumed approximately 2,000,000 tons more of purchased scrap than any previous year. However, the mills could have produced an additional 3,000,000 tons of ingots, and the foundries could have produced an undetermined tonnage of castings if more scrap had been available, according to Mr. Sawyer.

To Build Mica Plant

SOUTHEASTERN MICA CO., Spruce Pine, N. C., has been granted a charter. Authorized capital is listed as $200,000. Incorporators are Lewis M. Graham, Dr. L. Williams, and Bradley E. Ragan, who have announced that they will build a modern mica reclaiming and grinding plant for production of high grade dry-ground mica on Crabtree creek where they have long-term leases.

Lambert Bros., Inc., Knoxville, Tenn., is producing 200 tons of road stone per hr. near Linden, Tenn., for work on U. S. Route 100. Power for the crushed stone operation is being furnished by four Caterpillar diesel D13000 engines and two Caterpillar D17000 engines. In the illustration, a diesel D13000 furnishes power for a Telsmith crusher, while a diesel D17000 to its right powers a Symons cone crusher

Permanente Expands West Coast Operations

PERMANENTE CEMENT CO., Oakland, Calif., has announced purchase of a 5-acre tract on the Willamette River shore in Portland, Ore., immediately adjacent to leased facilities now being used by the company to supply 750,000 bbl. of cement for construction of McNary Dam, on the Columbia River. Addition of this property will give Permanente complete coast coverage, according to W. A. Marsh, general manager, supplementing distribution facilities in Seattle, Redwood City and Honolulu.

To Open Quarry

TOBIN QUARRIES, INC., Kansas City, Mo., has announced plans to open the Fred Michael quarry south of Alexandria, S. D., to supply crushed rock for the Fort Randall dam project. The Tobin contract calls for 600,000 tons of crushed rock and the firm has this and all of next year to fulfill the contract.

Preliminary work at the quarry consists of the building of a railroad spur, and installation of a crusher capable of producing 250 tons of rock per hr. Capacity of the plant will be 2000 tons per day, E. E. Glenn, vice president and treasurer, said.

Acquires Pumice Rights

PUMMA-STONE-AMERICA CORP., Detroit, Mich., has acquired rights to pumice deposits on two ranches near Marfa, Tex. Operations are scheduled to start in the Spring, according to A. Sherwood Vickers, president. Formerly the organization had been securing pumice from New Mexico and other Western states.

Adds Silica Grinding Mill

ASBESTOS CO. OF TEXAS, located at Houston, has announced addition of a mill that will grind silica to 200 mesh. The addition was built at a cost of $115,000.

Buys Fluorspar Mine

ALCOA MINING CO., Fluorspar Div., Rosiclare, Ill., has purchased the Klondike fluorspar mine in Livingston County, northeast of Smithland, Ky., from the Salem Fluorspar Co.

Permalite Trade Name Rights Clarified

IN THE September, 1948, issue of ROCK PRODUCTS, an item was published to the effect that J. B. Vincent had announced plans to manufacture Permalite, a trade-name for vermiculite, at Henderson, Nev. Great Lakes Carbon Corp., New York, N. Y., advised later that it is owner of the trademark, Permalite, applying the mark to lightweight aggregates and related products. This was stated on page 82 of the December, 1948, issue of ROCK PRODUCTS.

In reference to this last item, Mr. Vincent has written the following: "We are a Nevada Corporation, our corporation name being Permalite, Inc. We applied for a patent to use Permalite as a trade-name, and found that Great Lakes Carbon Corp. claimed this mark although it was not on the list received from Washington. We have not used the name Permalite in any way other than as our corporation name and do not intend to do so unless it should be granted to us as a patented trade-name which is not likely under the circumstances."

Mr. Vincent is president and general manager of the firm which at present is manufacturing roofing tile, using light-weight aggregates in its manufacture.

Nears Completion of Modernization Program

MONARCH CEMENT CO., Humboldt, Kan., is nearing completion of its $1,500,000 modernization program which was started last year. New equipment being installed includes a kiln of approximately 700,000 bbl. annual capacity, a clinker cooler, a waste heat boiler, an auxiliary boiler, and a 300-ft concrete chimney.

Buys Limestone Company

HOME LUMBER AND SUPPLY CO., Parsons, Kan., has announced purchase of the business formerly known as the Hillyard Limestone Products Co. Price Berryman, owner, said the quarry will be operated as part of the hard materials division of the lumber company, and in addition to furnishing limestone for building needs, will also furnish agricultural limestone.

Buys Magnesite Deposit

BASIC REFRACTORIES, INC., Cleveland, Ohio, has announced the purchase, from the War Assets administration, of a large magnesite deposit in the Paradise Mountain Range in Nye County, Nev., together with an adjacent ore dressing and calcining plant. Included in the purchase is a large rotary kiln from the Government-owned alumina plant at Baton Rouge, La.

Production at the Nevada operation is expected to start by July. Properties purchased include 45 lode-mining claims on 800 acres, ten mill-site claims of 50 acres, and 39 placer claims aggregating 4000 acres.

Buys Ordnance Plant Run by National Gypsum

UNION ASBESTOS & RUBBER CO. has completed negotiations with the War Assets Administration to purchase part of the former Bluebonnet Ordnance plant at Waco, Tex., operated during the war by National Gypsum Co. The acquisition consists of approximately 75,000 sq. ft. of manufacturing space and 125 acres of land to be used principally for the manufacture of high temperature insulation materials.

Hold Engineers' Day

COLORADO SCHOOL OF MINES will hold its fifteenth annual Engineers' Day in Golden, Colo., on April 22 and 23. All branches of engineering are to be represented, according to J. R. Medaris, chairman. The event will feature technical sessions in mining, metallurgy, petroleum production, petroleum refining, geophysics, and geology, as well as exhibits from companies engaged in the mineral industries.

Coming Conventions

March 17-18, 1949—
Indiana Mineral Aggregates Association, Inc., Annual Meeting, Claypool Hotel, Indianapolis, Ind.

May 5-7, 1949—
National Lime Association, 31st Annual Convention, The Homestead, Hot Springs, Va.

May 11-13, 1949—
National Industrial Sand Association, Annual Meeting, The Homestead, Hot Springs, Va.

June 27-July 1, 1949—
American Society for Testing Materials, 52nd Annual Meeting, Hotel Chalfonte-Haddon Hall, Atlantic City, N. J.

Limestone Not Classified as Legal Mineral

LIMESTONE is not a legal mineral, although it may be a scientific mineral, according to a ruling of the Texas Supreme Court. Since it is not a legal mineral, commercial limestone belongs to the surface owner of the land, and not to the mineral estate.

The decision was made after Mrs. Emilie Heinat had willed surface rights of a 400-acre farm in Williamson and Travis Counties, Tex., to a daughter, and the mineral rights to trustees for all of her children. When it was determined that limestone could be produced commercially on the property, the mineral owners sued for its possession.

The interpretation of "mineral rights" was given by Associate Justice G. B. Smedley as follows: "Substances such as sand, gravel and limestone are not minerals within the ordinary and natural meaning of the word unless they are rare and exceptional in character or possess a peculiar property giving them special value, as for example sand that is valuable for making glass, and limestone of such quality that it may be profitably manufactured into cement. Such substances when they are useful only for building and road-making purposes are not regarded as minerals in the generally accepted meaning of the word."

Film on Gypsum

UNITED STATES GYPSUM CO., Chicago, Ill., is sponsoring showings of a new color-sound film, "White Magic," which portrays facts about gypsum, its mining and processing, and modern uses of the material. Produced by Jerry Fairbanks, the movie features a comic cartoon character, Jaunty the Flame, who tells the story of gypsum.

Pavement Yardage

AWARDS of concrete pavement for the month of January have been announced by the Portland Cement Association as follows:

	Sq. Yd. Awarded During Jan., 1949
Roads	1,736,321
Streets and Alleys	783,586
Airports	40,531
Total	2,560,438

Erratum

IN THE December, 1948, issue of ROCK PRODUCTS, the last sentence in the first paragraph of the second column, page 134, should read: Producers of ground industrial sand, according to Mr. Walker, require more than *one-half million dollars worth of bags* per year for packing their products.

Crushed Stone Statistics

OUTPUT OF CRUSHED and broken stone in the United States in 1947, as reported by producers to the Bureau of Mines, totaled 206,136,330 short tons valued at $248,451,960, representing an increase of 16 percent in quantity and 23 percent in value over the 1946 figures. Included in the total is concrete aggregate, railroad ballast, agricultural limestone, riprap, stone sand and refractory stone. Stone used in the manufacture of lime and cement, asphaltic stone, and slate used for granules and flour are not included.

Crushed and broken stone used for concrete aggregates and railroad ballast, 60 percent of total output in 1947, increased 15 percent in quantity and 26 percent in value, compared with 1946. Of the 107,077,590 short tons used for concrete aggregate, 89 percent was produced by commercial operators and 11 percent by government agencies. Limestone for agricultural purposes, 11 percent of total tonnage of crushed stone in 1947, decreased 1 percent in quantity but increased 8 percent in value, compared with 1946. Other uses consumed 13 percent of the total, or 27,532,710 short tons valued at $45,367,803. In 1947, limestone, including dolomite, constituted 73 percent of all crushed and broken stone sold, excluding that used for making cement and lime, and was quarried in 44 states.

Supplement to Booklet on Freight Rates

UNION PACIFIC RAILROAD has announced Supplement 1 to its Memorandum of Increased Rates and Charges, which will reflect changes and additions occasioned by the issuance of the new Composite Master Tariff X-162-B and X-166-C, effective February 15. This supplement will show increases authorized in Tariff of Emergency Charges X-168, effective January 11, 1949. It also will contain increase tables reflecting 4, 5 and 6 percent increases to total freight charges of 1c to $1000, including a 3 percent table for figuring the Federal Transportation Tax. Copies of the supplement may be obtained free from W. T. Burns, general freight traffic manager, Union Pacific Railroad, Omaha, Neb.

Industrial Petrographer

A. J. WALCOTT CO., Industrial Petrographers, has announced the opening of offices and laboratory at 507 Dekum Bldg., Portland, Ore. This company will feature specialized consulting and research services in the application of petrography, optical mineralogy, and crystallography to various industrial problems, including investigations of minerals, rocks, industrial rock and ceramic products, and acceptance tests of concrete aggregate. Dr. A. J. Walcott is president of the new concern and director of research.

May Cease Nova Scotia Gypsum Operations

NATIONAL GYPSUM CO., Buffalo, N. Y., has informed the Nova Scotia Government that unless dredging operations are carried out by the Federal Works Department at Dingwall, N. S., this year it may be forced to cease operations there. Trade Minister Harold Connolly said the federal government had spent large sums in the past dredging Dingwall harbor, near the northern tip of Cape Breton Island, but had announced there would be no such expenditures this year.

Rock Quarry Closes

SOLVAY ROCK QUARRY, Winnfield, La., recently ceased operations due to exhaustion of its rock supply. The quarry had been in operation for over 12 years as a part of the Allied Chemical and Dye Corp., supplying material to the Baton Rouge chemical dye plant. S. J. Nolan, Jr., was plant superintendent.

Talc Mill Closes

W. H. LOOMIS TALC CORP. is reported to have closed its mill at Popple Hill temporarily. The new Gouverneur Talc Co., Balmat subsidiary of the R. T. Vanderbilt Co., also is reported as anticipating some reduction in work. Curtailments are said to be a result of a slowdown in orders.

Gypsum Plant Fire

U. S. GYPSUM CO., Chicago, Ill., had the upper section of its plant near the Boston, Mass., Navy yard, damaged to the extent of approximately $200,000 in a recent fire. The blaze was reported to have started from spontaneous combustion in barrels of asphalt used in wallboard manufacture.

$8-Million Cement Plant

CAPUS WAYNICK, Raleigh, N. C., businessmen, and industrialists in the area, are backing an $8-million cement plant to help curb local shortages of the material, it has been announced.

Interpret President's Budget in Regard to Liming

IN A LETTER to member companies, the Agricultural Limestone Institute interpreted President Truman's budget and budget message, which were presented to the Congress on January 10, and which read as follows with respect to the Agricultural Conservation Program:

"The Federal Government also makes payments to farmers to encourage desirable conservation practices. Expenditures for this program are estimated to increase from $227,000,000 in the fiscal year 1949 to $274,000,000 in 1950. For the 1950 crop-year conservation program—to be reflected in expenditures in the fiscal year 1951—I recommend planning for a $262,500,000 program *to include the cost of administering any acreage allotments or marketing quotas which may be adopted* as well as payments to farmers and related administrative expenses."

As stated in the Institute letter, "When the farm vote was so important a factor in the president's election and in view of his many utterances on the subject of conservation, why didn't he ask for at least $300,000,000 for the 1950 crop-year Agricultural Conservation Program? In regard to the italicized words, why did the Administration permit them to be put into the message? The effect of the words will be to reduce the sum of money that will be available during 1950 for conservation practice payments."

If the language of the appropriation bill that will be passed by Congress does not change the above provision with respect to acreage allotments and marketing quotas, the picture for the 1949 and 1950 program-years, in round figures, will be as given in the chart below, according to the Institute.

"This chart shows that net effect of the italicized words is to reduce the amount available for conservation payments. If, by 1950, surpluses develop in a number of crops and acreage allotments and marketing quotas are in wide use, it is conceivable that the estimate of $40,000,000 for administering them may be much too low and the sum available for conservation payments would be less than above indicated."

The Institute is taking the necessary steps to explain this to the proper individuals in Washington, according to Henry A. Huschke, managing director, in hopes that the matter will be rectified when the agricultural appropriation bill is under consideration.

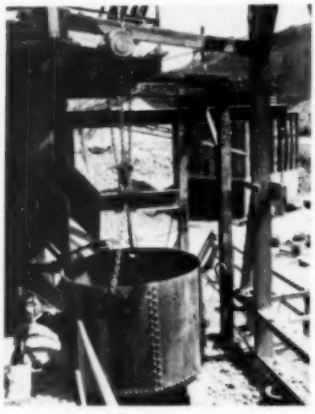
	1949 Program (millions)	1950 Program (millions)
Amount authorized or requested	$262.5	$262.5
Less:		
Administrative expense	$24.5	$24.5
Estimated cost of administering acreage allotments and marketing quotas	5.0	40.0
Available for conservation payments	29.5	64.5
	$233.0	$198.0

HINTS and HELPS

PROFIT-MAKING IDEAS DEVELOPED BY OPERATING MEN

Crusher Feed Hopper

AT A DRY crushed rock operation in the Southwest, a section of an old steel cylinder has been improvised to serve as a feed hopper for one of the



Steel cylinder serves as crusher feed hopper

final reduction crushers, a Kennedy gyratory unit. A beam above carries a 4-ton, Wright chain block so that the hopper can be moved to one side when necessary.

Pinch Valve

INSTALLATION OF A GATE VALVE in a large diameter line carrying abrasive materials often proves too costly because of excessive maintenance required; yet, control of the flow of material in such a line is sometimes

Homemade pinch valve

necessary. A homemade "pinch valve" solves this problem at a plant in the South. It consists of two top and two bottom diamond-shaped plates which are secured to the steel pipe at each end of the short rubber section in the line. The clamping, or pinching mechanism, supported by the steel plates, is located over the center of the rubber section, and is operated with a hand lever. The pipe is 6 in. in diameter.

By-Pass Trash

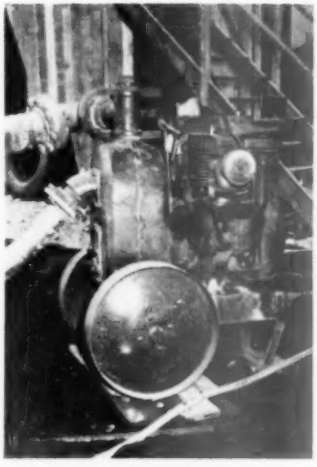
A SAND AND GRAVEL PLANT near Palmyra, N. J., uses a TD-9 International tractor and carryall to deliver pit materials to a steeply sloping grizzly ahead of the feeder serving the

Trash by-passes conveyor

washing plant. Material failing to pass the grizzly, consisting mainly of roots, brush or similar trash, is deflected to one side of the belt conveyor as shown in the illustration.

Water Re-Use

TO PROVIDE additional washing water at a West Coast sand and gravel operation until a permanent source was found, a portable 4-in. Sterling gas driven pump was employed. Rubber hose was connected to the suction and discharge lines. Hose from the latter discharges into the preliminary water going to one of the vibrating screens. The far end of the suction line was hung in the over-flow launder



Pump for water re-use

of a Bodinson sand drag. Although this water had some fines in suspension, it served the purpose of giving the gravel its first washing. Clear water sprays made the final rinse.

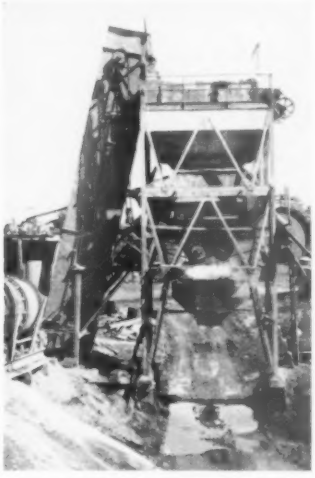
Tanks for Store Rooms

TWO STEEL TANKS are being used as store rooms at a ready-mixed concrete plant in the South. Doors have been cut into the tanks which now make weather tight store rooms for the company's bagged cement, pozzolith, and other materials.

Tanks for store rooms

Truck Tire Protection

AT A ROCK PRODUCTS OPERATION where bituminous road material is being prepared, trucks under the loading hopper stand in a puddle of water that the attendant keeps full with a fire hose. This protects the truck tires by keeping the hot tar from sticking to them.



Water keeps hot tar from sticking to truck tires

Standard Dump Trucks Haul Dry Batched Material

UPON COMPLETION of a new ready-mixed concrete plant in Pennsylvania recently a company was confronted with the tough job of furnishing 10,000 cu. yd. of concrete to a location 20 miles distant from the batching plant. To keep the job supplied would have required no less than 40 transit mixers if the usual method of hauling direct from the batching plant had been employed. As there were only eight mixer trucks available, the only thing to do was to make the mixer truck haul short enough so that this number would be enabled to maintain the supply.

A 4-cu. yd. hopper, arranged to receive its load from standard end-dump trucks via ramp, was built near the site of the job. Thirty-five dump trucks shuttling back and forth from hopper to batching plant, with dry batch, kept the eight mixer trucks busy. Water was added to the dry ingredients after they entered the mixer trucks from the hopper. Since four different sizes of mixers were being used, the entire operation had to be synchronized so that the hopper would be supplied with the proper size of dry batch for the various mixer capacities. The fleet consisted of four 4-cu. yd., one 3-cu. yd., two 2½-cu. yd. and one 2-cu. yd. mixers, which made it imperative to do the transferring with clocklike regularity.

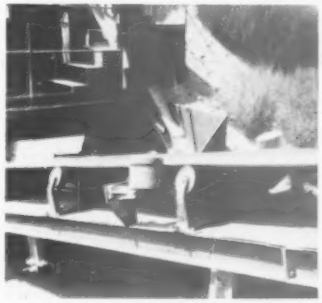
Truck Cleaner

A LARGE FLEET of material delivery trucks as well as a fleet of drum-type ready-mixed concrete haulage units, being maintained at a sand and gravel operation in the Southwest, are kept neat with an occasional steam cleaning. A small Kerrick Kleaner steam plant, which uses oil for fuel, serves this purpose. This steam plant is located in the open, and is said to generate steam rapidly.

Steam plant for cleaning trucks

Conveyor Belt Guide Rolls

RUBBER-COVERED guide rolls for conveyor belts, as shown in the illustration, are being used to correct mis-alignment of the belt without damage to the edges. The rolls are 7- x 7½-in. Goodrich units, located on the off-bearing belt of the 24- x 36-in. primary jaw crusher, one of the features of the new Roscoe, Calif., plant of Arrow Rock Co.



Rubber-covered guide rolls for conveyor belt correct mis-alignment of belt

Generator Sets Provide Steady Crusher Power

ROSEBURG SAND & GRAVEL CO., Roseburg, Ore., provides steady power for operation of its new crusher plant with three Palmer generator sets, operated by two International UD-24 power units and a UD-14 power unit. Rated capacity of these three sets, which operate in parallel and may be operated two at a time or all together, totals 180 kw., 75 kw. for each UD-24-operated generator and 30 kw. for that operated by the UD-14. Power goes to 15 motors which operate two Traylor crushers, a Telsmith gyrosphere, and five conveyors of various lengths.

Plant capacity is 60 cu. yd. of ¾ in. stone per hour. Rock and sand are taken from the river bed of the North Umqua River. Don Metzger is president of the company which his father, E. R. Metzger, founded in 1932.

Three generator sets furnish power for operation of crusher plant. Rated capacity of the three sets totals 180 kw.

New Machinery

ROCK PRODUCTS

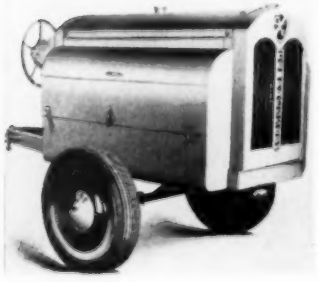
Hydraulic Dump Trailer

OMAHA STANDARD, Council Bluffs, Iowa, has announced a custom engineered trailer unit designed to meet heavy hauling and dumping requirements. The trailer chassis is all structural steel construction; all main frame members are riveted; and a specially designed hoist sub-frame distributes the load over the entire length of chassis, providing a low mounting height, according to the manufacturer. In addition, heavy duty, double lifting cam-type hydraulic hoists are furnished in accordance with load requirements.

Hydraulic dump trailer

Air Compressor

O.K. CLUTCH AND MACHINERY CO., Columbia, Penn., has announced the streamlined OK compressor SS60 which weighs 950 lb. with skid mounting and 1100 lb. with trailer mounting. The unit delivers 60 cu. ft. of free air and can be easily towed or carted to a job, the manufacturer states. Ford motor and standard automotive parts are used. Air tank capacity is 4 cu. ft. Use of an extra large air receiver is said to enable maintenance of greater air supply without overworking parts. It is water jacketed to protect against overheating.

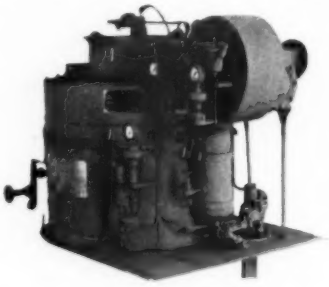


Streamlined air compresser

Steam Generators

VAPOR HEATING CORP., Chicago, Ill., which furnishes steam generators for heating diesel trains, has announced development of several steam generators for industrial use. These include sizes that develop from 300 lb. of steam per hr. (10 hp.) to 4000 lb. of steam per hr. (140 hp.) at working pressures of 50-600 lb. steam pressure.

These generators cycle on and off automatically, developing steam only when needed, according to the manufacturer. Power for the blower and spark may be supplied by electric or gasoline motors, making the units portable. Full working steam pressure is said to develop in two minutes from a cold start, with a patented coil design using seamless steel tubing and a fire burning diesel fuel.



Steam generator that develops 1000 lb. of steam per hr. (35 hp.) at working pressures of 50-300 lb.

Coat Rack, Locker Unit

VOGEL-PETERSON CO., Chicago, Ill., manufacturer of coat and check room racks, has added a new combination unit to its line called the Office Valet-Lockerette. This unit combines a coat rack with shelf overhead for hats and space below for shoes with individual lock boxes on the ends for purses, etc. The manufacturer claims that coats in the open are kept in press and away from lunch odors and is an aid in boosting employee morale.

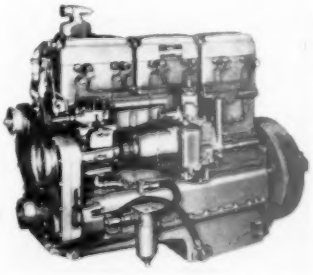
Earth Movers

WOOLRIDGE MANUFACTURING CO., Sunnyvale, Calif., is producing three new models of cable-controlled earth-moving equipment: Models BB-85 and BB-120 four-wheel scrapers and the BHD-19 bulldozer. The new scrapers feature rear-draft fulcrum leverage and pivot-tilt bowls, plus an unobstructed front apron opening of 60 in. The B-85 has a capacity of 8.5 cu. yd. struck and 11.0 cu. yd. heaped, while the BB-120 carries 12.0 cu. yd. struck and 14.2 cu. yd. heaped. the bulldozer, designed for the Allis-Chalmers HD-19 tractor, features heavy push arms, fabricated from formed channel, which telescope for knock-down shipment. A cable to power control unit follows side of tractor frame from an engine-mounted assembly, providing the operator with full visibility, the company reports.

Four-wheel scraper with pivot-tilt bowl

Adds to Diesel Line

CUMMINS ENGINE CO., INC., Columbus, Ind., has added to its line of diesels, the model HR-600 Engine which develops 165 hp. (maximum) at 1800 r.p.m., with $5\frac{1}{8}$-in. bore and 6-in. stroke. Piston displacement is 743

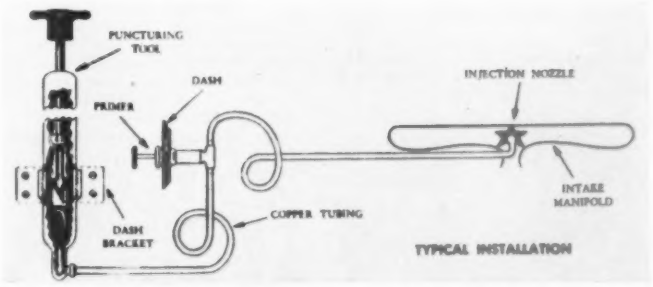


Diesel develops 165 hp. (maximum) at 1800 r.p.m. with $5\frac{1}{8}$-in. bore and 6-in. stroke

cu. in. The unit, which has a four-stroke cycle, is available in an automotive model, three industrial models, and a marine model.

Starting Fluid

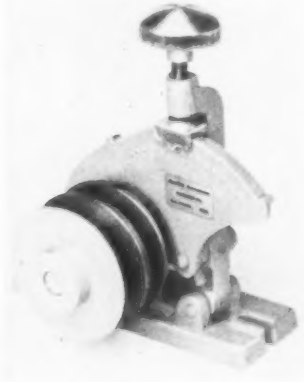
CALIFORNIA OIL CO., and California Research Corp., subsidiaries of the Standard Oil Co. of California, San Francisco, have developed the Chevron Starting Fluid, a quick-starting device for diesel and gasoline powered engines in cold weather. Basically an ethyl-ether compound, the fluid is packed in two sizes of gelatine capsules, 17 cc., and 7cc., for easy handling. The capsules are used with a special puncturing tool and priming system. The fluid is injected into the intake manifold as shown in the diagram. The fluid flows at 70 deg. F. below zero, according to the manufacturer, and lubricates as the engine is started.



Details of injection of fluid for quick starting in cold weather

Variable Speed Transmission

STANDARD TRANSMISSION EQUIPMENT CO., Pasadena, Calif., announces a newly designed CUB Variable Speed Transmission, featuring a hardened and ground shaft rotating in a fully sealed double ball bearing assembly. The two outer pulley flanges are fixed to the rotating shaft with the center pulley floating laterally on a large bronze bushing over the hardened shaft. This is said to increase life of the drive and power output through reduction in frictional losses. Bearings are sealed against dust. Constructed of cast iron, the unit is designed for applications where a 3.3-1 speed range and "A" Section V belts are sufficient. Base dimensions are $2\frac{3}{4}$ x $7\frac{1}{2}$ in.; overall width is $6\frac{1}{2}$ in.; and overall height is 9 in.



Variable speed transmission

Non-Fogging Safety Goggle

GENERAL SCIENTIFIC EQUIPMENT Co., Philadelphia, Penn., announces an improved Jackson Headrest Goggle No. W-50. Lenses to Federal Specifications, Standard 50 mm. size, are available in shades 3 through 6, and are held in individual molded plastic eye cups. Cover glasses protect the filter lenses and the outside of each eye

Headrest safety goggle

cup has a ventilating screen and baffle plate to prevent fogging. The goggle assembly is hinged from the sides of the headrest by telescopic arms. This arrangement is said to distribute weight of the goggles over the entire head.

Protective Coating

PRIMA PRODUCTS, INC., New York, N. Y., has announced formation of the Lithogen Corp. which is marketing a new protective coating consisting, basically, of a processed synthetic rubber compounded with fine mineral particles and plastic resins.

The product is being produced in three formulations, a smooth finish for walls, ceilings, and exterior or interior surfaces of all types of masonry, composition boards and asbestos siding; a granular finish for use on the afore-mentioned surfaces when a stucco-like finish is desired; and floor enamel for interior or exterior concrete and composition floors.

Advantages of the product claimed by the manufacturer are: great resistance to water penetration, resistance to formation of salt crystals on masonry surfaces, satisfactory vapor transmission to prevent peeling off due to hidden moisture in walls, and resistance to abrasion.

Crusher Hoist Prevents Jammed Rock Delays

HARNISCHFEGER CORP., Milwaukee, Wis., announces the P&H Zip-Lift Hoist, an electric crusher hoist for quarries, which has been designed to prevent delays in operation in the event of jammed rock. The unit, with accessory hook, is hung over the crusher, and the hook is slipped under an edge of the wedged rock. A push button control starts the lateral lifting action which turns the rock so that it slides into the crusher.

The hoist has two brakes: a solenoid dry disc, clapper type motor brake, and a disc type holding brake. The unit is fully enclosed so as to be weather-proof and dust proof, features shaved gears and grease-sealed bearings, and operates only when the buttons are pressed, according to the manufacturer.

Hoist to move jammed rock into crusher

Wagon Drill

INDEPENDENT PNEUMATIC TOOL CO., Aurora, Ill., has announced the Model BW-1 wagon drill which is equipped with a new Thor Model 105, 1¼-in.

Wagon drill with single reversible pneumatic motor that feeds and raises the drill

Drifter Rock Drill. The new wagon drill features a single reversible pneumatic motor that feeds and raises the drill, eliminating the need of a hoist. The motor driven feed also permits throttle control that allows the feeding speed of the drill to be reduced when necessary, according to the manufacturer. The drill's mast can be swung 360 deg. in a vertical plane for drilling of holes at any angle from horizontal.

The tubular frame of the rig serves as an air receiver, maintaining a continuous supply of air under pressure that is said to eliminate the usual pulsations of the hose line and insure a continuous pressure against the rock bit to prevent steel rebound between blows of the piston hammer. The Model BW-1 has a steel change of 6 ft.; an actual feed travel of 8 ft.; a regular road gauge of 4 ft, 8½ in.; a length of 8 ft.; a width, at its widest point, of 5 ft., 10 in., and a height, when drilling vertical holes, of 10 ft., 6 in.

All-Electric Shovel

MARION POWER SHOVEL CO., Marion, Ohio, has added the Type 111-M Ward-Leonard all-electric machine to its line of excavating equipment. The new unit, designed for heavy-duty service in quarry and construction industries, is equipped with a 3½-cu. yd. dipper and 33-ft. boom. All motions are electrically controlled. The motor generator set consists of an induction motor direct-connected to three direct current generators, and an exciter, all mounted on a self-supporting sub-base. Each generator is designed for variable voltage control. Other features listed by the company are: heat treated, machine cut gears, shafts of alloy steel; all-welded construction; "stiff leg" gantry; and all-welded box section boom made from formed plates having rounded corners for greater strength.

Nickel Electrode

THE HOBART BROTHERS CO., Troy, Ohio, is manufacturing a 100 percent nickel electrode, "Hobart Nickelcast," for producing machinable welds on cast iron without preheating the metal. The welds are said to be machinable both in the deposit and line of fusion and may be drilled, tapped or machined at any point in the weld zone. The coating is insulated to prevent arcing through when working in confined quarters. Nickelcast electrodes can be used with AC or DC welding current and are available in 3/32-, ⅛-, 5/32- and 3/16-in. dia.

Dynatherm Resistance Bulb

THE FOXBORO CO., Foxboro, Mass., is in full production on its Dynatherm resistance bulb which can be supplied with any Dynalog instrument. The bulb is suitable for any installation for operating temperatures below 600 deg. F., and can be installed easily to replace any thermocouple or filled-system bulb, in a well of ¼-in. dia. or more and of any depth or any material.

Towing Tractor

CLARK EQUIPMENT CO., Battle Creek, Mich., has redesigned its Clarkat industrial towing tractor with a new steering axle for full protec-

Towing tractor with protected tires

tion of tires on the wheels. A reduced steering tread permits the wheels to be turned to their extreme position within the body of the machine, and the new axle is said to be simpler and stronger. A universal joint incorporated in the steering mechanism helps eliminate wheel kickback. Another feature of the tractor is an upholstered air-cushioned seat for greater driver comfort.

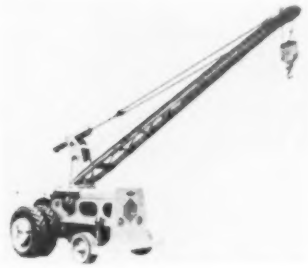
Correction

IN THE New Machinery section of the January, 1949, issue of ROCK PRODUCTS, the cuts appearing in the items, "Increases Line of Squirrel Cage Motors"—page 68; and "Increase Generator Line"—page 71, should have been interchanged.

All-electric shovel with 3½-cu. yd. dipper

All-Purpose Crane

CLYDE IRON WORKS, INC., Duluth, Minn., has announced the all-purpose Handi-Crane, mounted upon a Model UTI, Minneapolis-Moline Tractor.



All-purpose crane

The crane has a lifting capacity of 4 tons, and revolves 320 deg. so that loads can be picked up from any radial point. The boom is raised and lowered by means of a hydraulic cylinder, permitting independent boom topping at all times. Another feature listed by the company is an offset operator's seat for full visibility, with all controls grouped in convenient reach.

All-Welded Car Wheel

ADAMS MANUFACTURING & SUPPLY CO., Los Angeles, Calif., announced recently a newly designed all-welded wheel available in 10-, 14- and 18-in. diameters with axle holes to fit $\frac{5}{8}$- or $\frac{3}{4}$-in. axles, unless otherwise specified. Feature of this new wheel design is claimed to be closer fit to standard axles, providing easier handling and more true rolling. A special jig holds the wheel for axle drilling, assuring accurate centering.

Flotation Machine Added to Equipment Line

WESTERN MACHINERY CO., San Francisco, Calif., has established full sales and engineering service facilities for the Fagergren flotation machine, latest addition to the WEMCO line of machinery and equipment. Western Machinery Co. last fall acquired exclusive manufacturing and sales rights for Fagergren cells, previously handled by American Cyanamid Co. H. N. How, president of Western Machinery Co., stated that the flotation machines are available in six commercial sizes and may be installed in units of one to six cells each. The company's line of WEMCO products also includes equipment for heavy media separation plants, the WKE (HMS) "Mobil-Mill," spiral classifiers, thickeners, densifiers, sand pumps and sand preparation machines.

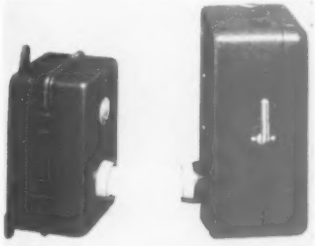
Trip Scale

OHAUS SCALE CORP., Newark, N. J., has made available the new Harvard Trip Balance, which features stainless steel weighing platforms and beams and is for laboratory use. An even arm scale for comparative weighings, it has 6-in. dia. stainless steel plates at the points of continuous usage.

Lightweight portable loader with planetary drive

Photoelectric Smoke Indicator

PHOTOSWITCH, INC., Cambridge, Mass., has announced the Type A20C-1 photoelectric smoke indicator which indicates the density of smoke passing through the flue or breaching of a



Photoelectric smoke indicator

heating or power plant, and signals when this density approaches the values prescribed by municipal smoke ordnances. The unit consists, basically, of a photoelectric control and light source, which are mounted on opposite sides of the flue. The light source beam is projected across the flue onto the control. A sensitivity adjustment permits the equipment to be set so that it will signal when smoke density approaches the value prescribed as maximum, according to the company. Supplementary equipment includes bell alarms to signal excessive smoke, densimeters, and recorders.

Portable Loader With Planetary Drive

MIXERMOBILE MANUFACTURERS, Portland, Ore., announces the Model "C" Wagnermobile Scoop, a lightweight, portable loader. The new model features planetary drive gears on each of the drive wheels. Instead of direct drive to the wheels, the axle now drives heat-treated gears that transmit the power to the drive wheels at a gear reduction of 3 to 1. The result is said to be smoother action under power and increased life for mechanical parts. The unit can still be towed behind a truck at speeds over 20 m.p.h. by disengaging the planetary drive. Other features include a wider chassis; larger, roomier cab; safety glass; shorter turning radius; simplified hoist control; and 600 lb. counterweight that is built into the machine.

Enlarges Pump Line

WORTHINGTON PUMP AND MACHINERY CORP., Harrison, N. J., has added four new boiler feed pump sizes to its line of centrifugal pumps: two 6-in. pumps and two 8-in. units. Data and specifications are contained in Bulletin W-318-B7E.

Mechanize Limestone Mine

Conventional room and pillar system is developed for mining limestone on five levels at U. S. Lime Products Corp. operation, Sonora, Calif. Extensive use is made of drag scrapers for delivery to primary crusher, located at lowest level of mine

By W. B. LENHART

THE MINE AND PLANT of U. S. Lime Products Corp. are located about one mile south of Sonora, Calif., on a limestone belt that extends in a Northwesterly direction, roughly paralleling the famous Mother Lode gold mining belt of California. The deposit, originally laid down in horizontal beds, has been tilted to a dip of 80 deg. easterly and has been metamorphosed to a coarsely crystalline stone. The deposit is about 700 ft. thick and is confined within walls of schist of the Calaveras formation. There are five distinct beds, but only two, with an average thickness of 350 ft., are being worked at present. The limestone is a high calcium material. Some dolomitic rock is trucked to the Sonora plant from a deposit near Columbia, a few miles north of Sonora.

Prior to 1928, stone was secured at the Sonora operation in two ways: by surface quarrying, and from an underground mine that was opened by a flat incline from the quarry floor. In 1928, a vertical shaft was sunk in the thickest bed. This shaft is started from the floor of a previously worked quarry. Collar of this shaft is about 60 ft. below the surface level and the landing platform for the shaft has been constructed at the so-called surface level and is some 60 ft. above the actual collar of the shaft. In the illustration of the crushing plant, the old quarry opening can be seen at the left with the steel headframe erected over the shaft. Working levels are established at 120-, 170-, 215-, 265-, and 320-ft. levels, measuring from the surface.

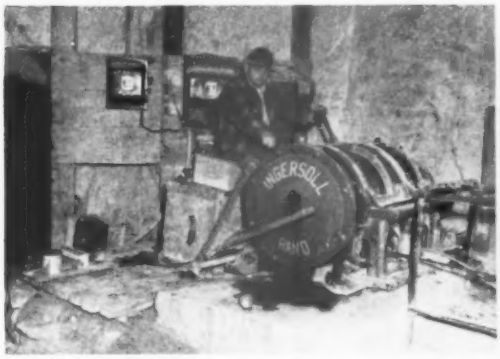
Change From Hand Labor

Until late in 1942, all underground mining was done by hand labor. The larger sized stone for the vertical kilns was sledged and loaded into one set of 27-cu. ft. cars, and minus 4-in. stone was hand shoveled into another set of cars, which were raised to the surface on a cage. The coarse rock was then delivered up an incline to the kilns, some 700 ft. distant. Fine rock was hand fed to a hammer mill in the sizing plant which prepared the stone for the rotary kiln burning and other purposes, after which it too was hoisted up the incline to the kiln for burning or other processing.

During 1943, because of labor shortage, mechanization of the mine began. Mucking machines were installed, and mule haulage substituted for hand tramming. An inclined belt conveyor from the mine's shaft to the sizing plant was installed, and did away with hand dumping of cars into the hammer mill. Breaking rock to 12-in. top size for the vertical kiln continued ahead of the mucking machines. Production was bettered considerably with the new facilities, but the problem of keeping fines out of the kiln stone soon arose, and a more suitable mine operation had to be devised.

Early in 1944 a comprehensive plan for complete mechanization of the mine was worked out, and by 1947 this plan had been carried out in full with gratifying results to the management. In working out the plan, certain control factors had to be considered. These were: the small intervals between levels which had been established (around 50 ft.), as against

Overall view of plant. Shaft headframe can be seen at left. Housing covers inclined conveyor belt serving sizing and crushing plant. Steel storage silo is located extreme right



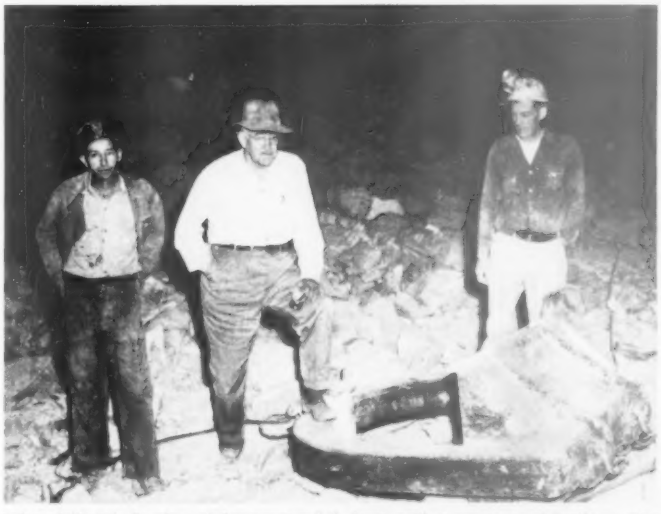
Left: Operator at controls of two-drum electric slusher. Right: Quarry cars, after being hoisted to the surface, are pushed about 5 ft. and dumped to a surge bin serving the crushing plant

Left: Chutes for loading two-ton quarry cars. Chutes are located at the bottom of a belled-out raise just below the underground crusher and just above the 320-ft. level. After loading, the cars are pushed to a cage and hoisted to the surface. Right: A 5-ton side dump car collects some rock and delivers it to a grizzly ahead of the underground crusher. However, most of the rock is delivered to the grizzly by slusher

the rather large working widths (over 100 ft.); and elimination of any underground sizing, except control of the top size (minus 12 in.). The product coming out of the mine would then be a mixed-size product and would be screened at the surface in the sizing and re-crushing plant.

Diamond drilling had established a block of ground some 400 ft. long, and over 100 ft. wide in plan section which lay next to the schist hanging-wall. This block had not been touched by previous mining operations, and was selected for attack using the new mining method. The block was such that it could be mined from about the 70 ft. horizon to the 265 ft. level. The distances involved were the length of the block, 400 ft., and the shortest distance from the south end of the block westerly to the vertical shaft, some 200 ft. Careful mining was indicated because of the existence of occasional small water courses and mud seams. Under the new set-up there is enough easily available rock to last about 15 yr.

Entrance cross-cuts were driven into



Left to right: John Rountree, slusher operator; S. L. Arnot, resident manager; and Joe Carey, mine foreman, in one of the older stopes. Slusher was company built

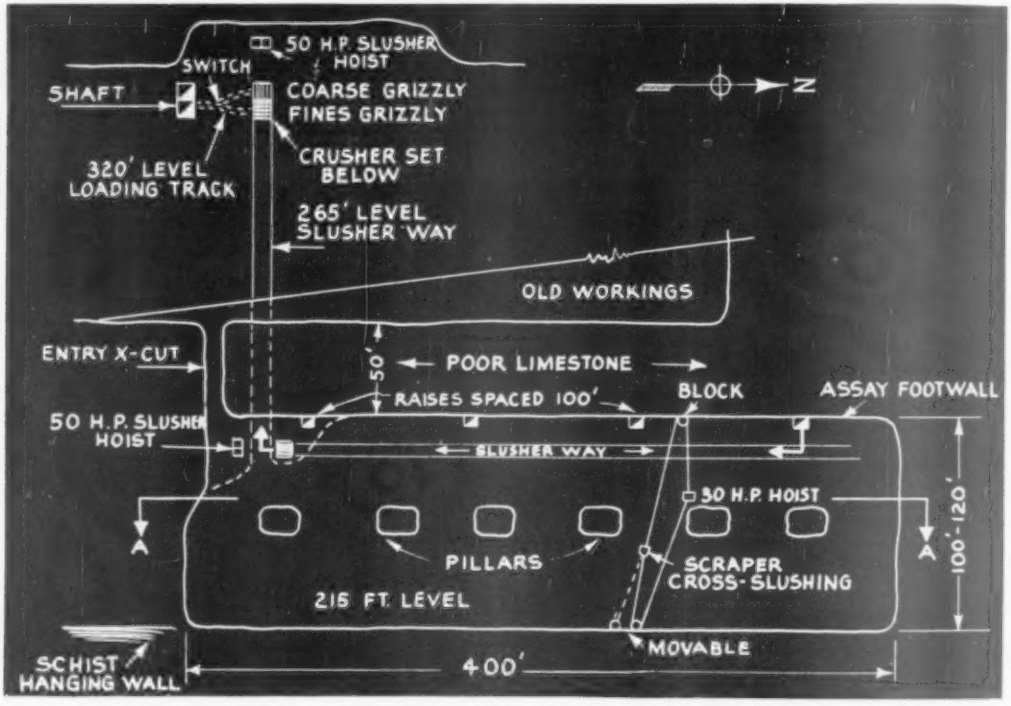
Slusher delivers rock to grizzly. Fines fall through smaller openings in back, by-passing the underground crusher

the selected block on the 120-, 170-, 215-, and 265-ft. levels, connecting old workings with the new block, and penetrating about 50 ft. of off grade limestone. A single raise was driven from the 265-ft. to the 215-ft. level. Four raises, spaced on 100-ft. centers, were then driven from the 215- to the 170-ft. levels. These four raises were in a straight line and on the footwall side of the block. Inasmuch as stoping above the 170-ft. level had advanced well ahead of the development work on the 120-ft. level, five additional raises from the backs of the 170-ft. stopes were put through to the 120-ft. level so that stoping above that level could fit into the general operating plan. Most of the raise work was put through before the horizontal development, the raises having been placed in service as the connections were made.

At each of the levels, 215, 170, and 120 ft., the first step was to cut out on the flat to the limits of the block with drifts, which were about 50 ft. wide and from 8 to 10 ft. high. They were driven on both the hanging-wall and on the foot-wall sides, and were so connected by short cross-cuts that they left a line of pillars along the center line of the block. The final plan section at each level than became 400 ft. long by about 120 ft. wide, including the pillars along the center line of the long axis.

Over-all Operating Plan

Before attempting a detailed further discussion of this interesting mining operation, it might be well to first look at the general, over-all pattern that was embodied in the new operating plan. The mine at present bottoms at the 320-ft. level. The under-ground, primary crushing plant is located between the 265- and 320-ft. horizons. All limestone mined above the 265-ft. horizon is transported to this unit by a combination of (1) gravity—dropping the rock down the raises, and (2) slushing with heavy, large capacity, drag-type, scrapers.



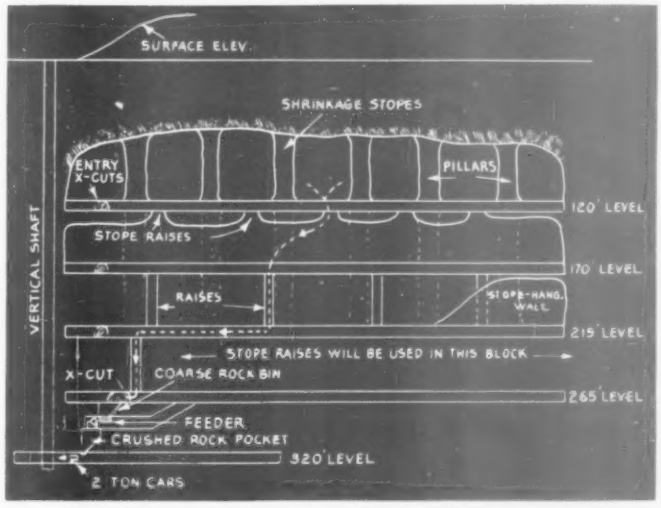
Plan view showing method of transportation of limestone as slushed from raises in mine. The 170-ft. and 120-ft. levels are similar in arrangement

There is no trackage on any level, except in the cross-cuts, where it is used for service and incidental purposes. All rock as mined is transported to the top of the most convenient raise by slushers. The rock then falls out onto the floor of the level below and is again conveyed (by another slusher) towards the crushing plant near the bottom of the mine. Thus, gravity takes care of the vertical movement of the limestone, and slushers take care of the horizontal component. While there has been, from necessity, much study of the timing of stoping, and of development work at the various levels, a description of the passage of rock from above the 120-ft. level to the bottom of the mine will serve to illustrate the method.

After cutting out on the flat at the 120-ft. level, shrinkage stoping was started, breaking the rock directly onto the floor of the level. This work started at the northern end so that all work followed a "retreat" pattern, always working towards the south end nearest the shaft. The excess rock, from solid to broken—amounting to about 40 percent—was slushed down stope-raises to the 170-ft. level. Practically at the same time, stoping was carried upwards about 60 ft. above the 120-ft. level. The back here was well arched.

Slusher Operation

Rock from this stoping is slushed down the stope-raises using Ingersoll-Rand, 30-hp., electric slusher hoists (double drum), which pull a double-edged, 42-in. scraper made in the company's own shops. On this sized slusher, a $\frac{5}{8}$-in IWRC plow steel rope is used on the pull-in side, and a $\frac{1}{2}$-in. wire rope on the back-haul. At the 170-ft. level, another slusher of the same size and make moves the rock to the top of one of the four-in-line raises. These raises have a steel rail grizzly over them with 60-lb. rails on 16- to 18-in. centers. Rock that stays on this grizzly can be hand-sledged through, bull-dozed, or block-holed. At the 215-ft. level, the outlet of the four raises is served by a 50-hp., Ingersoll-Rand electric double-drum hoist that pulls a 60-in. slusher. The flow of material through the four raises is controlled, in a measure, by the angle of repose. The 50-hp. hoist is located just south of the single raise from the 265-ft. level, and the top of this raise is grizzlied with 90-lb. rails spaced on 18-in. centers. The slusher moves the rock from the toe of the four raises to the 265-ft. raise. The larger slusher moves rock a maximum distance of 400 ft., and a $\frac{5}{8}$-in. line is used on both the pull-in and haul-back. The most southerly of the four raises discharges practically onto the grizzly of the 265-ft. raise, and therefore, requires very little movement by the 50-hp. slusher. The movement here is just enough to scrub it through the grizzly.



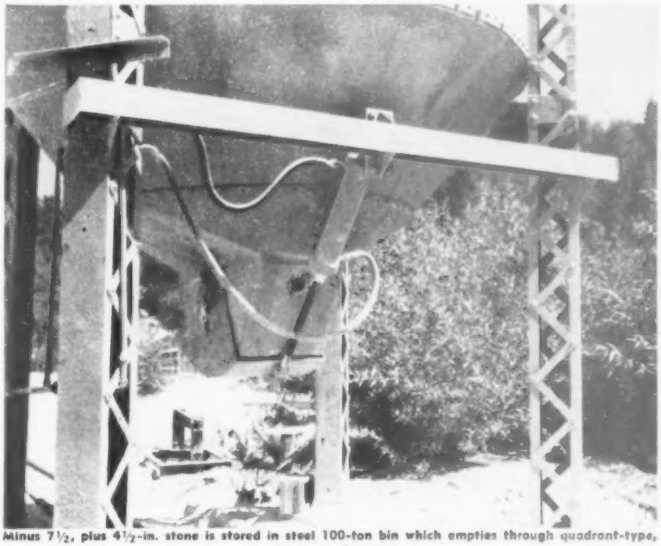
Longitudinal section A-A (see plan view) showing elevation pattern of mining

After stoping is completed above the 120-ft. level, cutting out of the floor is started, beginning at the north end of the block and retreating towards the south end. The floor of the 170-ft. level also will be taken out, but the floor of the 215-ft. level will be left intact for purposes of safety.

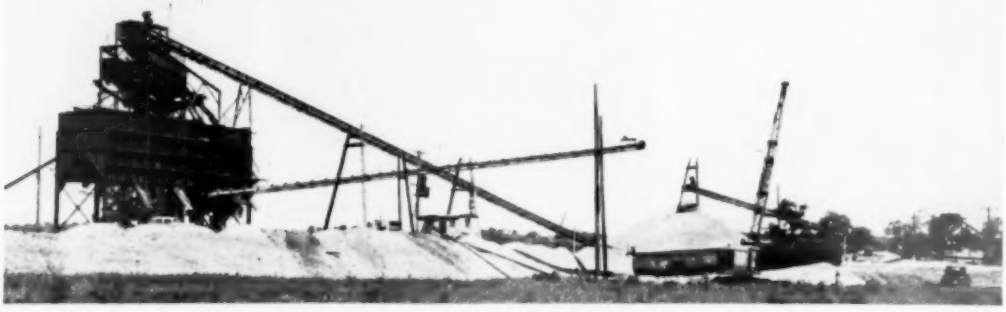
The 30-hp. slusher hoists on the levels are moved occasionally to better positions for cross-slushing, for pillars are often in the way. All slusher hoist wiring is in conduit and is occasionally passed through diamond drill holes from the level above to the level below.

At the 265-ft. level, the flow of rock is controlled from the single raise by the angle of repose, with the height of the toe fixed by steel I-beams. From the foot of this raise, the rock is moved at right angles to the stope pillar line for the purpose of transferring it to the crusher bins. A 50-hp. Ingersoll-Rand slusher hoist with a 60-in. scraper is used for this transfer. The rock is slushed onto a heavy

(Continued on page 116)



Minus 7½, plus 4½-in. stone is stored in steel 100-ton bin which empties through quadrant-type, air-operated gates



General view of the Liverpool plant showing screening equipment above 7-compartment bin, conveyors, and raw stockpile at the left. Dredging and primary crushing operations are at right

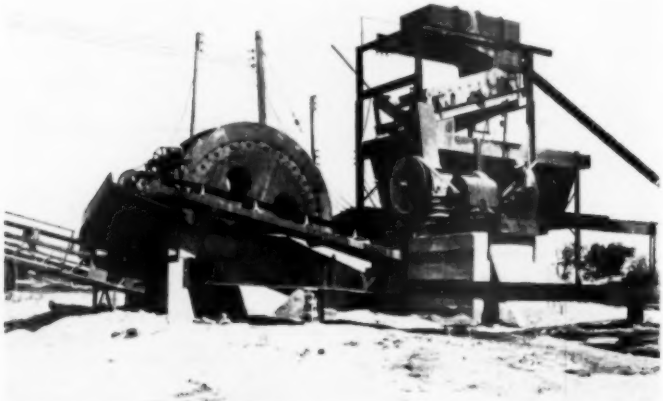
Sand and Gravel: Employ Three Methods of Recovery

Material obtained by dragline, slackline, and dredge at the three plants of Liverpool Materials Co., Liverpool, Ill. Shipments are made by truck and barge

By HARRY L. SPOONER

ONE OF THE NEWER sand and gravel companies in the midwest, Liverpool Materials Co., is now operating three plants in the vicinity of Liverpool, Ill. Oscar Linn is president of the concern.

The business was originated ten years ago when Mr. Linn opened a gravel pit on one end of the Duck Island Farm, several miles above Liverpool, which he had been operating for the Whitnah estate on a partnership basis up to that time. The farm is located between two large sloughs of the Illinois river and is underlaid with gravel which has an over-burden of only three to four feet. The gravel pit was opened on a partnership basis. Later, after Mr. Linn had left the farm, he purchased his partner's interest in the gravel plant and continued its operations.



Preliminary screening and crushing section at Liverpool plant. Oversize on the top deck enters the jaw crusher, right, joins the smaller sized material on conveyor belt, and goes to dewatering wheel, left, from where it is conveyed to stockpile

In the meantime Mr. Linn had purchased 320 acres of land adjoining the village of Liverpool. Before a drainage program was started there some years ago, this land was an island, with the Illinois river on one side and a large slough from the river on the other side. When the slough was drained, the "island" became a part of the mainland. About 300 of the 320 acres of land on the "island" are underlain with gravel deposited by the glacier that hollowed out the channel of the river. Overburden here also is only about three to four feet.

In 1946 Liverpool Materials Co. was incorporated, and took over operation of the Duck Island plant. This same year a plant was opened on the "island," or Liverpool property. The company also established a plant on the Spoon river 15 miles west of Canton, Ill., the gravel deposit having the same thickness of overburden as at the two other plants.

A D-7 Caterpillar diesel tractor is used at all three plants, along with a LaPlante-Choate 9-cu. yd. scraper for removing the over-burden, which is used to fill in holes caused by removal of gravel.

At the Duck Island operation, the

upper 12 to 15 ft. of gravel lies above water line and is processed into road gravel, using a Bucyrus 22-B dragline and a Universal 880 Junior portable gravel plant. With this exception, equipment and operating procedures at the Duck Island and Spoon river plants are practically identical. The material, which lies below the water line, is brought out of the pit by a 2-cu. yd. Sauerman Bros. drag scraper, and conveyed to a Simplicity 3- x 8-ft. screen which is mounted on top of four 21-cu. yd. bins. From the bins, material is chuted into trucks or conveyed to a stockpile. All surplus sand, along with much water, is pumped back to the pit by a 4-in. Morris dredge pump. Material that goes into the stockpile is loaded to trucks by a Barber-Greene bucket loader.

Gravel and sand are graded to meet state specifications for road building and for concrete mixtures for roads and other purposes. The Duck Island plant produces about 150,000 tons per year and the Spoon river plant approximately 100,000 tons per year.

The Liverpool plant began operations with the Universal 880 portable gravel plant and a Bucyrus 22-B drag line, now being used at the Duck Island plant, and produced road gravel for use exclusively on township and county roads. During the summer of 1948, a complete washing and grading plant was set up.

Material is taken from the pit by a Meckum 10-in. dredge pump mounted on a barge together with a 40-ft. chain cutter of the same make. Pit-run gravel is discharged to a Simplicity 4- x 10-ft. double-deck screen. Oversize from the top deck is chuted to a Universal 1036 jaw crusher, and from the crusher goes to a 24-in. conveyor belt. Smaller gravel sizes from the lower deck are chuted directly to the belt, by-passing the crusher. Surplus water and sand go to a Simplicity 3- x 14-ft. dewatering wheel which picks up the sand and deposits it on the same 24-in. belt which takes all three sizes to a raw stockpile with a capacity of 4000 tons.

At dock on Illinois River, adjustable chute deflects the flow of sand from dump truck for more even distribution in barge

Below the stockpile, a 50-ft. tunnel with a 24-in. conveyor leads to a washing and sorting tipple on which two 4- x 10-ft. Simplicity screens are mounted; a triple-deck screen at the top and a double-deck screen below. Water is supplied through sprays from a 6-in. Morris high-pressure water pump.

Surplus water and sand are fed by gravity to two 18-in. x 20-ft. Eagle sand screws where the sand is given a final washing and is dewatered.

Sorted materials from the screens and the sand screws go to a Butler 7-compartment 900-ton bin, for loading directly to trucks or to five conveyors which take them to the stockpile. A 24-in. conveyor beneath the bin is used to blend the various materials into grades desired.

Because of the large stockpile which feeds the tipple, it is possible to run the dredge pump without running the screening equipment on the tipple at the same time. Trucks are loaded from one side of the tipple. On the other side space has been left for rail facilities which the company hopes to obtain next year.

Some water shipments of sand are being made. While there is a local market for all gravel produced, there is a surplus of sand due to a shortage of river barges. Sand is hauled by truck a half mile to a barge dock on the Illinois river, dumped directly into the barges, and shipped to Chicago markets. A barge could be loaded every day if enough were available. When rail and water facilities are obtained, the plant will be expanded.

While most of the gravel is sold to township, county and state road builders, the plants also find a ready market with lumber yards, concrete block plants, etc. Gravel is hauled considerable distances, as far as 80 miles away in some instances.

Seven men are employed at each plant. At the Spoon River and Duck Island plants two shifts are in force. Only one shift is on duty at the Liverpool plant, which has a capacity of 150 tons per hour. The other plants have capacities of 40 to 50 tons per hr.

A 30- x 60-ft. repair shop is located at the Liverpool plant where a stock of parts and conveyor belts is kept. Full-time mechanics are employed at both the Liverpool and Duck Island plants. They also assist at the Spoon River plant if there is need for repairs. All plants are located within a short distance of each other. Lester Oaks is superintendent of all three operations and each plant has its own foreman.

Ten-in. dredge and cutter employed at Liverpool plant

Calcining

An ELECTRICALLY-FIRED Kiln

Swiss cement manufacturer experiments with converging electrodes to displace solid fuels

By LOUIS S. PHILLIPP, Jr.

During the war of 1914-1918 the Swiss cement industry became interested in the possibilities of manufacturing portland cement (wet process) by the use of electrical energy and tests were first begun during this period. As the slurry must be brought to a temperature of around 1450-deg. C., only an electric arc could be expected to produce sufficient heat for a furnace of this type.

Initial tests were made in an oven of copper, using a system begun by Héroult, but the results were not satisfactory, for in this type of oven the raw materials came in direct contact with the electrodes of graphite or carbon and this caused the formation of calcium carbide.

Experiments to develop a kiln using electric energy were again taken up in 1941 at the plant of the Holderbank cement company at Wildegg, Switzerland, under the direction of Dr. H. Gygi, director and administrator of the plant.

Dr. Gygi was responsible for the idea of using a rotating kiln like that normally used in the manufacture of cement, and installing at the end of the kiln, in place of the normal coal-firing hood, a system of converging electrodes built in such a manner that the flame of the arc could be projected out into the center of the kiln.

Arcs of Converging Electrodes Provide Calcining Flame

Proceeding with this idea, the entire hood of the kiln carrying the electrodes was built on rollers so that it was possible to change from the use of electricity as a fuel to that of coal in a matter of minutes before the kiln or its contents cooled appreciably.

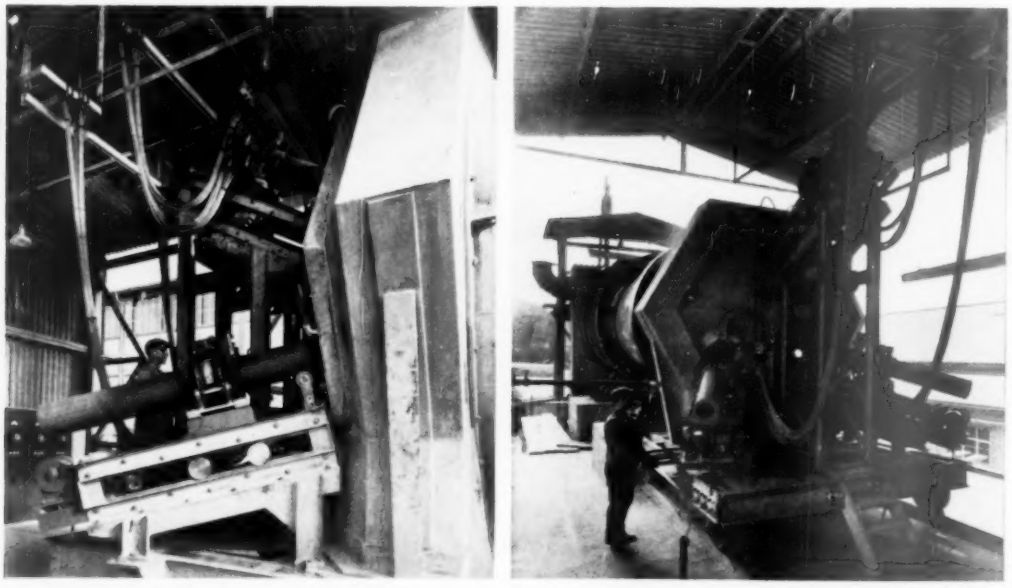
The first series of tests was undertaken with an electric potential of 90 volts carrying an average of 900 kw., and the arc was produced by means of graphite electrodes 25 cm. in diameter. All of the tests were conducted in a semi-industrial type kiln with a capacity of about 1000 kw.

All of the electrical equipment used, including the automatic regulation devices for the electrodes, was built by Ateliers de Sécheron, an electrical construction firm of Geneva, Switzerland.

These first tests were run with excellent results, and the clinker obtained showed identical quality, and was in every way similar to that manufactured at the same time from the same slurry in the regulation kilns of the plant.

It was early decided that it would have been useless to have built other types of installations based on other methods of thermic generation. The experiments indicated that it was necessary to develop an electrical arc of sufficient power for penetration to duplicate the flame produced by coal.

Further, only the actual calcining zone was constructed for this electrical kiln, without any changes pertain-



Left: View taken from side of firing end of kiln, showing large electrodes mounted so that they are advanced automatically to form the arc flame. Each electrode is 25 cm. in diameter. Right: Electrode installation in operation. Incandescense is visible through inspection plate port. Entire firing head is mounted on wheels and may be easily removed and replaced by a coal-firing blower hood

Clinker produced in kiln fired by electric arc flame. Size of clinker varied from 2 to 10 mm., and was satisfactorily calcined

ing to pre-heating and cooling, as these zones were irrelevant to the test.

It was found during the tests that the magnetic field which was formed at the head of the electrodes produced an effect of blowing the flame from the arc out into the kiln, in the direction in which the converging electrodes pointed. In these tests this flame attained a visible length of from one to one and one-half yards and proved to be entirely satisfactory for the production of cement and also to be of sufficient size to protect the electrodes.

In spite of these advantages, it was found that the electrodes were consumed at too rapid a rate, and, considering the methods used, one should have been able to have at least partially protected the electrodes against attack by calcium dioxide from the calcium carbonate.

Experiments With High Voltages

This rapid use of the electrodes having condemned the process when using a current of low potential, experiments were then made over a period of three years using high voltage electric current of 8,000, 10,000 and up to 13,500 volts. These tests were begun and based upon the experience in the manufacture of nitric acid by means of an electric arc in the processes of Siebert, and of Pauling.

Variations in the tests included the use of triphase, biphase, and monophase currents, and with various metal electrodes such as iron and copper, cooled by water circulating in a jacket.

Further tests were made on methods of controlling the flame from the arc with the aid of a special ventilator, but with little success. Every imaginable device and mechanism was tried to stabilize the flame of the arc and to increase performance.

Among other developments, it was found possible to develop a monophase arc of 500 kw. but only with the assistance of an induction coil, for the stabilization of the flame could not be effected except with a factor of maximum force of 0.36.

Because of the difficulties encountered and because it was impossible for the electrical industry to construct further new installations, tests were suspended during 1946.

The plant's owners, however, intend to proceed further with the tests, and have launched a program of study and research in anticipation of future trials.

Convert Coal-Fired Boiler to Oil

PERFORMANCE of a coal-fired boiler converted to oil by means of a gun-type burner is described in a report of the National Bureau of Standards. Many coal-fired boilers are converted to the use of fuel oil each year to obtain the greater convenience of liquid fuel, the report states, however, converted coal-fired boilers are usually not as efficient as boilers originally designed for fuel oil since the efficient combustion of coal requires more combustion space and larger gas passages through the boiler than does liquid fuel.

Tests were made to show the advantage of using a precast lightweight combustion chamber instead of one made of standard firebrick for the oil burner and to evaluate the increase in capacity obtainable with two types of cast-iron baffles. These showed that a refractory firebox of low heat capacity and low thermal conductivity increased the efficiency of the converted boiler several per cent, and that baffles which effectively direct the hot combustion gases over the heat-transfer surface increased the capacity of the boiler up to 27 per cent.

Potash Mining Procedures

A SURVEY of the operating procedures of the Potash Company of America in the Carlsbad region of New Mexico is given in a report, "Information Circular 7445," recently made public by the Bureau of Mines. Because potash deposits in the Carlsbad area resemble flat coal beds, coal-mining equipment and methods have been used successfully, the report states. The conventional room-and-pillar method is employed.

Geology of the area, methods of sampling and estimation of tonnages and values, transportation and ventilation are fully discussed, as well as safety measures, current wage scales and company organization. Safety is stressed ahead of all other ends. A safety engineer is employed, and a safety committee is appointed. The committee makes a monthly inspection of the mine and surface plant in an effort to reduce hazards to health and to effect safe operations.

Turf Surface on Stabilized Soils

TURF SURFACE on stabilized soils is a new development in road building according to a paper by Dallas D. Dupre, Jr., which states that such a surface has strength necessary to carry the traffic load, is attractive, cheap and easy to maintain. It is said to be suitable for runways for light planes and for highway shoulders.

The paper quoted findings of Dr. G. O. Mott of Purdue University who found that pit-run gravel or crusher-run stone, all passing a 1-in. screen, will do the trick of furnishing the supporting power. The depth or thickness of the material is governed by a study of existing or anticipated traffic on a given section of highway. By adding 5 to 10 percent clay soil, treated with commercial fertilizer, to the aggregates, grass will grow to form a tough turf binder.

New Sand Barges

KEYSTONE SAND AND GRAVEL DIVISION, Dravo Corp., Pittsburgh, Penn., recently added 10 additional sand and gravel barges, manufactured by the Engineering Works Division of the same company, which are being used on Pittsburgh district waterways. Each of the welded steel craft is 135 x 27 ft.

Crushed Stone Production in 1949 To Equal 1948 Record Volume

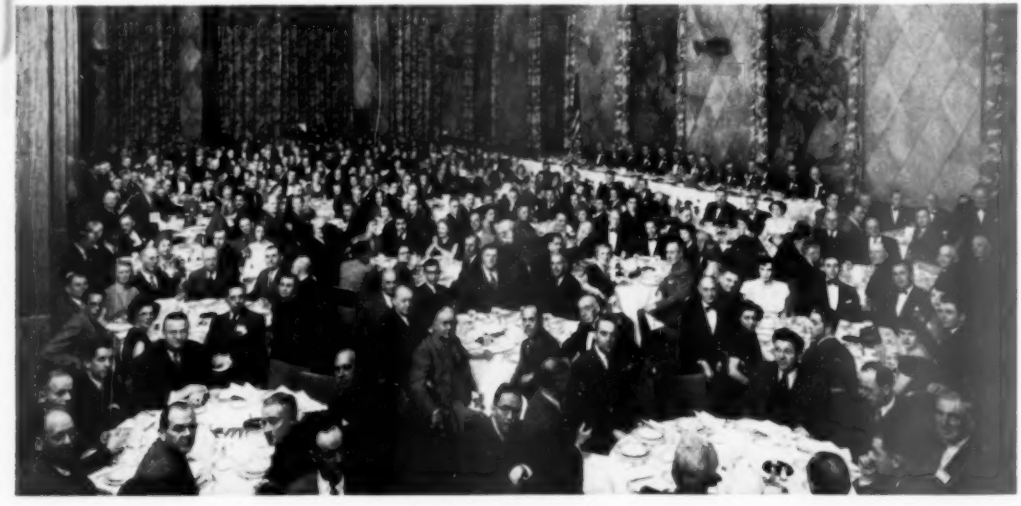
National Crushed Stone Association convention again features open forum meetings for operating men. Blasting, legislation, ballast, research also considered

A WELL-DIVERSIFIED PROGRAM of papers and events attracted an attendance of approximately 700 to the thirty-second annual convention of the National Crushed Stone Association, held February 7-9 at Hotel New Yorker, New York City, N. Y. The registration constitutes a new record for a non-exhibit year and was particularly gratifying to association officers in view of the fact that this year, for the first time, the Agricultural Limestone Institute, met separately from its parent organization. Otherwise total attendance in New York would have approximated 900. Reports of the fourth annual meeting of this division of the N.C.S.A., held February 21-22 at Chicago's Edgewater Beach Hotel, will be published in the April issue of ROCK PRODUCTS.

The New York convention, reported herein, preceded by one week the annual meetings of the National Sand and Gravel Association and the National Ready-Mixed Concrete Association, which also will be reported in the April issue of ROCK PRODUCTS. In line with mutually-established policy, the three Associations will meet consecutively at the Stevens Hotel in Chicago late in January, 1950, where a machinery exposition will be held concurrent with the conventions. Expositions for the three industries are to be held every other year, leaving the odd years open for each Association to select its own time and place of meeting. It is anticipated that the 1950 annual meetings will feature the largest and most comprehensive machinery exhibit ever held, since Chicago's Stevens hotel has the largest exposition facilities of any hotel in America, and the Manufacturers' Divisions of the Associations are seeking new members to swell the list of exhibitors.

Operating men and equipment manufacturers again had two entire sessions set aside for consideration of operating problems. One was for informal discussion of topics presented in advance for consideration by operating men; the second, like a year ago, was for a panel discussion of short time delay blasting. These specialized meetings are proving very popular since portable loud speakers are passed around so that any individual who cares to may comment or present questions on operating problems for which he seeks advice.

Recognition was given to the fact that a buyers' market is at hand, and several interesting talks were presented on sales and new markets for crushed stone products. Among other subjects considered in session were the prospects for business in 1949; the reports of the administrative director, engineering director and field engineer; the role of aggregates in the durability of concrete; factors affect-



Social highlight of the New York convention of the National Crushed Stone Association was the traditional annual banquet, at which president Steve Weston, Jr., was toastmaster. Over 500 attended the function

Officers and majority of the board of directors, Manufacturers' Division, National Crushed Stone Association: Seated, from left to right, are vice-chairman Irwin F. Deister; past-chairman J. B. Terbell; vice-chairman R. C. Johnson; secretary J. R. Boyd; chairman Cottrell Farrell; W. S. Weston, Jr., president of N.C.S.A.; and vice-chairman J. Craig McLanahan. Standing, left to right, are W. W. King, Roy Wills, A. E. Conover, R. D. Ketner, L. A. Eiben, R. F. Feind, D. McM. Blackburn, Milo A. Nice, Jess Richards, L. C. Mosley, E. M. Heuston, C. H. Roberts, B. R. Maloney, S. S. Ellsworth, and M. L. McCormack

ing the performance of asphaltic concrete pavements; the significance of the recent national elections; basing points; safety, federal legislation and probable amendments to labor laws.

The board of directors met on Sunday, February 6, preceding the convention and the newly elected board of directors met on February 8. The Manufacturers' Division conducted its annual business meeting at a luncheon on February 8. Social events included a cocktail party and buffet supper and the annual banquet which was attended by more than 500.

Presiding Officers

W. S. (Steve) Weston, Jr., president of N.C.S.A., was presiding officer for the opening general session which summarized business conditions for 1948 and the outlook for 1949, heard the yearly reports of the Washington staff, and concluded with a presentation on sales. Harry C. Battin, Jr., president of the New York State Crushed Stone Association and vice-president, The Callanan Road Improvement Co., South Bethlehem, N. Y., presided at the traditional greeting luncheon on February 7. T. C. Cooke, president, Lynn Sand and Stone Co., Swampscott, Mass., and George Lott, Jr., Palmetto Quarries Co., Columbia, S. C., were presiding officers and discussion leaders for the sessions set aside to consider plant operating problems.

President W. S. Weston, Jr., also presided over the annual business meeting and the annual banquet concluding the convention. Other session chairmen were F. W. Schmidt, Jr., North Jersey Quarry Co., Morristown, N. J.; S. P. Moore, Concrete Materials and Construction Co., Cedar Rapids, Iowa; past-president W. F. Wise, Southwest Stone Co., Dallas, Texas; past-president G. A. Austin, president, Consolidated Quarries Corp., Decatur, Ga., for a general luncheon; and Wilson P. Foss III, president, New York Trap Rock Corp., New York, N. Y. F. J. Buffington, safety engineer, New York Trap Rock Corp, and chairman, Cement and Quarry Section, National Safety Council, presided over an evening meeting devoted entirely to consideration of accident prevention.

Election of Officers

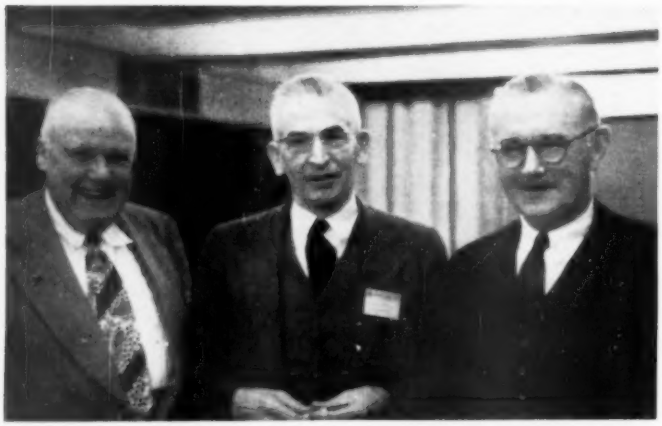
Following a report at the annual business meeting by G. A. Austin for the committee on election procedure and membership, officers and members of the board of directors were elected. W. S. Weston, Jr., president, Weston and Brooker Co., Columbia, S. C., was re-elected president of the National Crushed Stone Association.

J. Reid Callanan, The Callanan Road Improvement Co., South Bethlehem, N. Y., was elected a regional vice-president (Eastern). Re-elected regional vice-presidents were T. C. Cooke, Lynn Sand and Stone Co., Swampscott, Mass. (New England); W. N. Carter, National Stone Co., Joliet, Ill., (Midwestern); W. T. Ragland, Superior Stone Co., Raleigh, N. C. (Southeastern); V. C. Morgan, Kentucky Stone Co., Louisville, Ky., (Central); W. H. Wallace, Wallace Stone Co., Bay Port, Mich. (Northern); Mrs. Anna R. Wilson, Granite Rock Co., Watsonville, Calif. (Western); E. Eikel, Servtex Materials Co., New Braunfels, Texas (Southwestern). Also re-elected were J. R. Boyd, Administrative Director; A. T. Goldbeck, Engineering Director; and J. E. Gray, Field Engineer. James Savage, Buffalo Crushed Stone Corp., Buffalo, N. Y., is treasurer.

Directors

Newly elected to the board of directors were C. P. Haun, Franklin Limestone Co., Nashville, Tenn.; A. W. McThenia, Acme Limestone Co., Fort Spring, W. Va.; John Odenbach, Dolomite Products Co., Inc., Rochester, N. Y.; and F. B. Thatcher, Carbon Limestone Co., Youngstown, Ohio.

Re-elected to the board of directors were G. A. Austin, Consolidated Quarries Corp., Decatur, Ga.; L. J. Boxley, Blue Ridge Stone Corp., Roanoke, Va.; H. H. Brandon, Melvin Stone Co., Melvin, Ohio; Bruce S. Campbell, H. T. Campbell Sons' Corp., Towson, Md.; A. J. Cayia, Inland Lime and Stone Co., Manistique, Mich.; Arthur F. Eggleston, John S. Lane & Son, Inc., Meriden, Conn.; Wilson P. Foss, III, New York Trap Rock Corp., New York, N. Y.; Otho M. Graves, General Crushed Stone Co., Easton, Penn.; G. F. Hammerschmidt, Elmhurst—Chicago Stone Co., Elmhurst, Ill.; R. G. L. Harstone, Canada Crushed Stone, Ltd., Hamilton, Ont., Canada; J. L. Heimlich, LeRoy Lime and Crushed Stone Corp., LeRoy, N. Y.; R. P. Immel, American Limestone Co., Knoxville, Tenn.; N. E. Kelb, Cum-



At the safety meeting were (left to right) L. F. Miller, F. J. Buffington (chairman), and Wilson P. Foss, New York Trap Rock Corp.

berland Quarries, Inc., Indianapolis, Ind.; H. C. Krause, Columbia Quarry Co., St. Louis, Mo.; R. T. Lassiter, Southern Aggregates Corp., Raleigh, N. C.; J. C. Lauber, Trap Rock Co., Minneapolis, Minn.; G. D. Lott, Jr., Palmetto Quarries Co., Columbia, S. C.; M. E. McLean, East St. Louis Stone Co., East St. Louis, Ill.; Paul M. Nauman, Dubuque Stone Products Co., Dubuque, Iowa; H. E. Rainer, Federal Crushed Stone Corp., Buffalo, N. Y.; Russell Rarey, Marble Cliff Quarries Co., Columbus, Ohio; W. R. Sanborn, Lehigh Stone Co., Kankakee, Ill.; James Savage, Buffalo Crushed Stone Co., Buffalo, N. Y.; F. W. Schmidt, Jr., North Jersey Quarry Co., Morristown, N. J.; A. T. Smith, Rock Hill Quarries Co., St. Louis, Mo.; O. M. Stull, Liberty Limestone Corp., Buchanan, Va.; D. L. Williams, Virginian Limestone Corp., Ripplemead, Va.; W. F. Wise, Southwest Stone Co., Dallas, Texas; A. L. Worthen, New Haven Trap Rock Co., New Haven, Conn. The president and the regional vice-presidents are also members of the board of directors.

Elected honorary members of the board of directors were past presidents J. A. Rigg, Acme Limestone Co., and F. O. Earnshaw, formerly president of Carbon Limestone Co., who with Mrs. Earnshaw were guests at the convention.

Re-elected to the executive committee were G. A. Austin, W. N. Carter, Otho M. Graves, Russell Rarey, F. W. Schmidt, Jr., W. F. Wise, A. L. Worthen, H. C. Krause, representing the Agricultural Limestone Institute as its president, and Cottrell Farrell, Easton Car & Construction Co., chairman of the Manufacturers' Division.

Resolutions

Resolutions were read to the convention by R. G. L. Harstone expressing appropriate tribute in the deaths of E. G. Lewis, formerly of Bucyrus-Erie Co. and chairman of the Manufacturers' Division in 1929, Merle Jacobs, vice-president of Bethlehem Steel Co. and Miss Beulah Davies who had served on the staff of the N.C.S.A. in Washington since 1925. It was resolved that the Association go on record as advocating that industry have the right to absorb freight to meet competition and that the right should be made clear by legislative action. Another resolution was one of thanks to the U. S. Bureau of Mines for its interest in the crushed stone industry and particularly because it is now reprinting bulletin 422 on blasting studies. Appreciation was expressed to the Hotel New Yorker, its officers and its staff for the hospitality extended and a resolution was passed asking president Weston to appoint a committee on accident prevention for the purpose of intensifying the association's interest and effort in safety.

Ladies' Entertainment

Over 70 ladies were registered at the convention and participated in a delightful program of entertainment. Among the scheduled events for their enjoyment were a "get-together" tea, a visit to the radio broadcast "Strike It Rich," one to the Fred Waring show, another to the broadcast "Grand Slam" and NBC-studio-Television tour at Radio City and a conducted tour of United Nations at Lake Success. The ladies were also invited guests to the N.C.S.A. greeting luncheon, the cocktail party and buffet supper, the general luncheon to hear the address "World Government" by Cord Meyer, Jr., and to the annual banquet.

Mrs. W. H. Wallace was chairman of the ladies' entertainment committee and, from what we heard, did a remarkable job in planning and organizing the many activities. Others on her committee were Mrs. F. O. Earnshaw, Mrs. Cottrell Farrell, Mrs. Hamilton Lott, Mrs. J. A. Rigg and Mrs. W. S. Weston, Jr.

Safety

Accident prevention is destined to play a larger part in association activities judging from the show of interest at the evening session under the chairmanship of F. J. Buffington, New York Trap Rock Corp., who is chairman of the Cement and Quarry Section, National Safety Council. This was only the second such meeting conducted for the special purpose of discussing safe operating practices and the attendance and interest were far more than a year ago. Safety equipment and accident analysis literature were among the special subjects discussed, but most of the discussion until late at night was concerned with the organization of methods to conduct a planned program for safe practices in the crushed stone industry. The interest shown was reflected later in the resolution taken requesting that the president appoint an accident prevention committee.

Earlier, Mr. Buffington had presented the National Crushed Stone Association Safety Awards for 1947. Mr. Buffington in making the awards, outlined the results of the tabulated data which form the basis for the awards. He pointed out that the accident experience in 1947 was not good. There were ten fatal accidents during the year and 73,500 man-days lost, which he said was the worst record since 1930. The loss so suffered amounted to between $500,000 and $750,000.

Mrs. W. H. Wallace, chairman, Ladies' Entertainment Committee, at New York convention of N.C.S.A.

In the contest for 1947, 42 quarries and eight underground mines participated. They operated a total of 8,500,000 man-hours. Mr. Buffington particularly complimented the records of some of the plants of the General Crushed Stone Co. He pointed out that the LeRoy plant of General Crushed Stone Co., winner of the 1946 competition, again had a perfect record but that the Rock Hill plant of the same company, at Quakertown, Penn., was the winner of the trophy for 1947 by virtue of more man-hours worked. The trophy, presented by *Explosives Engineer*, was received by superintendent E. Z. Cole. The plant had operated 93,869 man-hours without a lost-time accident.

In accepting the trophy, Mr. Cole said that in order for a safety program to be successful top officials must be interested in safety and take the lead in instilling enthusiasm to supervisors and workers.

The Winchester, Mass., plant and the Auburn, N. Y., plant were second and third, respectively. H. F. Yotter, safety director of the company, which operates 26 plants and ten quarries, accepted the certificates. The Cape Girardeau, Mo., operation of Marquette Cement Manufacturing Co., and the No. 4 trap rock quarry of the Southwest Stone Co., of Dallas, Texas, were accorded honorable mention.

In conclusion, Mr. Buffington pointed out that three of the larger quarries of General Crushed Stone Co. had gone through 1948 without lost-time accident which likely will reflect in further honors next convention.

Charles F. Parker, Blue Ridge Quarry, Westbrook, Maine

Business Conditions and Outlook

PRESIDENT W. S. Weston, Jr., in calling the first session of the National Crushed Stone Association to order, briefly welcomed those in attendance and then summarized reports by the regional vice-presidents on business conditions during 1948 and the outlook for 1949.

This summary, which we briefly present here, has significance because each regional vice-president had secured answers to specific questions and comment from producers throughout the region he represents.

Volume of business was greater in 1948 than in 1947. There was little change in the midwestern region, slight increase in the New England and southwestern regions, a favorable volume in the central region and an increase reported for the southeastern area. Volume was up 15 percent in the eastern region, 20 percent up in the northern region and 10 percent up in Canada.

Price level, comparing 1948 with 1947 levels, was up a reasonable amount. The level was up 10 percent in the midwest, 8 percent in New England, 5 percent in Canada, 10 percent in the eastern region, 5 percent in the northern region and was reported slightly increased in the other regions.

Relation of volume of demand to capacity in 1948 was very high, the percentage ranging from a low of 75 percent in New England to 100 percent in the southwestern region and in Canada. In the northern region, volume of demand exceeded productive capacity. In the other regions, the average was near 90 percent.

Distribution of Sales

Distribution of sales in 1948 according to principal uses was reported by regions. The percentages for highway construction were 32 percent (midwestern), 47 percent (southwestern), 48 percent (southeastern), 48 percent (northern), 75 percent (New England), 21 percent (central), 80 percent (eastern) and 40 percent (Canada).

Sales for railroad use in 1948 were 12 percent (midwestern), 19 percent (southwestern), 15 percent (New England), 11 percent (central), 10 percent (eastern) and 7 percent (Canada).

Distribution for building construction in 1948 was 24 percent (midwestern), 5 percent (southwestern), 29 percent (southeastern), 2 percent (northern), 8 percent (New England), 8 percent (central), 5 percent (eastern) and 32 percent (Canada).

Chemical and metallurgical uses in 1948 took considerable tonnage in the midwestern, southwestern and central region. The percentages of output for those purposes were 24 percent (midwestern), 18 percent (southwestern), 1 percent (southeastern), 11 percent (northern), 8 percent (New England), 40 percent (central), 1 percent (eastern) and 23 percent (Canada).

Riprap stone was almost nil in relation to total tonnage except for the midwestern region where 7 percent of output was riprap in 1948. There was none in New England, the central region and in Canada. The other regions reported from a fraction of one percent to two percent, in the southwestern region. Agricultural limestone took considerable volume of total production in 1948 in the midwestern and central regions as would be expected. The percentage of volume as reported was 17 percent (midwestern), 3 percent (southwestern), 0.8 percent (southeastern), 9 percent (northern), 0 percent (Central), 3 percent (eastern) and 2 percent (Canada). Miscellaneous uses ranged from 0 to 6 percent of production. Little or no change in the distribution of production by uses is expected in 1949.

Five of the regional vice-presidents

Grinning for the camera is John Jorgenson, New York Trap Rock Corp.

Fred Krewer, Columbia Quarry Co. seems to be a good listener as J. T. England, Acme Limestone Co., drives home a point

E. F. Haberkern, Columbia Quarry Co., St. Louis, Mo.

reported that volume of business in 1949 would equal that for 1948, two predicted slight declines and full capacity production is anticipated in Canada. Thus, a very excellent year is anticipated.

According to reports as to whether new productive capacity had developed in 1948, roadside operations and portable plants are making continuing inroads, no doubt due to high freight rates and the increased activity in road building.

In the midwestern region, little new competition has developed and that is from roadside operations. In New England, modernization and the incoming of portable operations has been increasing capacity in the area every year and continues. Much new productive capacity was reported in the southwestern region, equally divided between permanent and portable plants. There is evidence of new roadside plants in the central region which is also so in the southeastern region where there has been much modernization of existing plants as well. A great number of new operations have come into the eastern region, where double shift operation has also increased productive capacity. In the northern region, the main increase has come from modernization and, in Canada, increased primary and secondary crushing capacity has stepped up the potential capacity of plants.

Regional vice-presidents' comments on the effect of freight rate increases and other conditions having economic significance as summarized by Mr. Weston, revealed that the trend in freight rates is a serious hazard to the crushed stone industry. For some producers, rail hauls are vanishing and there has been total loss of all freight movements even to some plants located on railroads. The average distance of rail hauls generally has shrunk. The influx of roadside plants has driven many permanent plants to the use of trucks even on long hauls. Already, trucking of crushed stone has increased 20 percent. It is felt that rail hauls once lost never will be regained. High labor rates have had a bearing too, since double-handling is necessary on rail shipments.

Administrative Director's Report

Administrative director J. R. Boyd commented very briefly on the many activities of his office during 1948. Much emphasis is being given to resisting further freight rate increases and on other matters of most urgent concern to the crushed stone industry.

One of the new developments has been the Association's participation in conferences with the National Securities Resources Board which will lead to preparations well in advance in the event of another national emergency. An advisory committee to function for the crushed stone industry will be named.

Financial condition of the National Crushed Stone Association is excellent and active membership has been maintained practically the same in numbers as in 1947. Associate membership has been increased by six in 1948 and the Agricultural Limestone Institute membership is in excess of 200.

The Association has just published an attractively illustrated and informative brochure "How N.C.S.A. Serves Its Members" for which past-president Otto M. Graves was given a vote of thanks. Mr. Graves was, in fact, editor-in-chief of this presentation which clearly sets forth the aims and accomplishments of the organization in such a way as to be useful in acquainting the membership with the goals of their association and which could be utilized as a strong sales instrument for attracting new members.

Engineering Director's Report

Now that the engineering activities of the Association have reverted to a more normal condition, following establishment in the new headquarters, engineering director A. T. Goldbeck had a number of activities to report which indicated that his new facilities have already been put to intensive use. His report briefly summarized major activities and touched upon some of the main problems confronting the industry. Basically his activities, as covered in the report, comprised laboratory investigations and routine tests, field trips for member companies on specific problems, technical society work, the writing and presentation of technical papers, the planning of research, report writing and the short course for salesmen.

Mr. Goldbeck reported on over 30 important laboratory researches conducted, which space will not permit us to discuss, but which have important bearing on preservation of markets and the development of new uses for stone. Among them were tests to determine the durability of hot mix bituminous concrete when specific aggregates were used. As a result, otherwise questionable aggregates were found suitable only when natural sand fine aggregate was used which finding is a means to preserve a market for a certain granite in this case. Similar studies led to specific recommendations when using other specific rocks. Another study led to the conclusion that an all-silica dust as a filler should be avoided in bituminous concrete mixes. Work is continuing to extend the N.C.S.A. method of proportioning concrete, to include very fine and very coarse sands. Another project will determine the effect of changes in gradation on the voids in stone.

Another test determined that the toughness of soft rock was not improved by a surface coating of asphaltic material although such treatment might increase its resistance to abrasion. In another study it was determined that dusty stone was apt to produce a non-durable bituminous concrete in the presence of water and under the action of traffic. In still another project, tests led to a recommendation for correcting a porosity difficulty in the use of solid concrete brattice blocks that saved this business for a producer. We mention the foregoing by way of illustration; many other equally important researches were enumerated.

Field trips included three conferences with highway officials to discuss specifications. Mr. Goldbeck has continued very active in the work of technical societies and has prepared and presented a number of technical papers.

Durability of bituminous concrete

Apparently in earnest, J. Reid Callanan plays the piano

mixtures including the development of test methods for its determination, reactive aggregates, the compatibility of aggregates and the question of gradation of railroad ballast are some of the matters being considered in planning research ahead. The third short course for crushed stone salesmen is in preparation.

Field Engineer's Report

Field engineer J. E. Gray has had another active year in traveling on special assignments involving particular technical problems; in attendance at meetings of local crushed stone associations, state highway conferences; and in calling on member companies to help solve their technical problems. His work with engineers of the various highway departments is of a basic nature with benefits to large numbers of producers and therefore has been given preference over regular calls on member companies.

A number of objections to the use of crushed stone have been overcome as a result of Mr. Gray's study of specific problems, often followed by laboratory investigation. To illustrate, it had been claimed that concrete made with a certain crushed stone was unsatisfactory due to poor particle shape. Investigation disclosed that the difficulty was really due to improper proportioning and to excessive segregation of the stone in handling. Another study led to the use of screenings in equal part with natural sand when using air-entrainment. The foregoing are merely typical of the types of work accomplished.

During 1948, Mr. Gray made calls on member companies in Illinois, Indiana, Iowa, Kentucky, Michigan, Missouri, Minnesota, North Carolina, New Jersey, New York, Ohio, Tennessee, West Virginia, Wisconsin, and Ontario, Canada. In addition a number of talks were given before meetings of regional crushed stone associations. Mr. Gray will be an active "professor" when the short course for crushed stone salesmen is given, having as his principal subjects the gradation of aggregates, proportioning of concrete and the problem of flat and elongated pieces which are three of the most important considerations of the industry.

Fred A. Krewer, Columbia Quarry Co., left, chatting with Vern Morgan, Kentucky Stone Co.

J. R. Boyd, administrative director, National Crushed Stone Association, left, and president, W. S. (Steve) Weston, Jr.

"The Time is Now"

Gene Flack, sales counsel and director of advertising, Sunshine Biscuits, Inc., New York, N. Y. spoke on the subject of sales and expressed optimism for business conditions, in his talk "The Time is Now," presented at the opening session of the convention. His was one of the most colorful, forceful and dramatic presentations it has been our pleasure to hear but, in between his almost endless humorous stories and analogies, he put across two messages of real importance.

One was that all of us are in the business of selling something and that fact should not be forgotten. He, being a successful salesman of many years experience, would not concede for a moment that present high volume of sales constitutes a ceiling that cannot be surpassed. His second key point was that the only thing that can hurt business in 1949 is if we talk ourselves into a recession. He cited the high level of national income, the extremely high purchasing power, large volume of unfilled demands, high rate of industrial production, the population increase, the high level of employment, excellent banking structure, abundance of credit, the vast need for public works and the prospective record-breaking volume of export business as reasons why business should continue excellent.

Operating Problems — Drilling

ACCORDING to T. C. Cooke, who presided over the first part of the operating session, there would be no printed copies of the agenda for operating men as had been the practice in the past. (We might deviate a little here and explain to the newcomers in the industry that it has been the practice in the past for operating men, during the year, to send in their questions to the association headquarters, and these questions are brought up for discussion on the floor. Often, several operators from different parts of the country send in the same question, so, the number of questions sent in on any one subject can be used as a gauge to determine the general interest in said subject). The first question presented requested experience records relating to tungsten carbide bits.

Nelson Severinghaus, Consolidated Quarries Corp., Decatur, Ga., stated that he had used wagon drills with carbon insert bits and that they had been in operation about four months. They are detachable bits. The cost has been 8 cents per ft. of hole drilled. A big advantage, however, was that the drilling speed was twice that with other types of equipment, and with less broken steel. Bits are ground four times and a total life of around 200 ft. is attained. The proper time to grind the bit is judged by the number of feet it has already drilled so re-grinding is done at life spans of around 50 to 60 ft. The company uses $1\frac{1}{4}$-in. steel, with 2-in. cross bits. No "collaring" troubles were encountered. It appears that the term "collaring" was introduced by David Duncan, Virginia Limestone Corp., Ripplemead, Va., and he explained that it was a term that means breaking off threads on the detachable bits low down on the bit, or, it might be

Left to right: Mrs. L. C. Wright, L. T. Wright and R. I. Harris, Callanan Road Improvement Co.

called "base failures." Mr. Duncan, while on the floor, said that according to his company's experience when using Carset bits, the drilling rate was so fast that the bits got very hot (180-200 deg. F.), and that hot bits might account for bit failures. He had no cost data to offer. He mentioned that his quarry had a stratum of flint or chert and that it was drilled with the Carset bits, as a rule. In his opinion 3000 to 4000 ft. would have to be drilled with each bit to put them in the economical range. Failures came at around 130 ft. which was attributed to excessive heating of the bit. The bits were re-sharpened under contract.

One operator said that late in 1948 he had experimented with 2½-in. cross-type carbide insert bits with no shaft failures to date. He used 1¼-in. steel and at 100 ft. of life the Carset bits had no measurable wear. The "retracting time," or the time required to withdraw the bit from the hole was considerably greater and he attributed it to lack of room behind the bit for the particles to get out of the road fast enough. He thought a 3-in. bit with a greater flare behind the head might help.

Harold Tardy of Lynn Sand and Stone Co. said that carbide bits were cheaper than regular bits (on a foot basis) and that their use had saved up to 22 percent. There has been some trouble with bits breaking at the threads, but performance was better after some experience.

Alfred N. Foley, west Roxbury Crushed Stone, asked Mr. Severinghaus what type of wheel he used for re-sharpening and he said he used any one of several recommended wheels with No. 80 grain size. No coarse wheel is wanted, he said, and it is only necessary to dress the tungsten insert section. If re-sharpening cuts down the clearance too much, the bit had best be discarded.

One operator with experience with carbide bits when used with jackhammers said that that type of drill wore clearance too fast and was too costly and that the steel bound in the hole. He also said the inserts became loose in time.

M. L. McCormack, Ingersoll-Rand Co., manufacturer of Carset bits, said that the type of wheel to use should be "the Green brand" and that it was a silica carbide wheel. He said gauge wear was one common cause of binding, and that the carbide edges should be the only portions touched up by the wheel. He said larger bits could be later used for smaller holes and that the user of Carset bits should touch up the carbide bit section only as that part of the bit does the gauging and drilling.

Mr. McCormack, when asked if different sized bits would be available, answered in the affirmative and said that Carset bits were now in stock in sizes from 1⅝ in. to 2½ in. with ¼-in. difference in sizes. (or changes). He also mentioned the 5⅝-in. Carset bits used on the company's large Rockmasters. It was brought out that the use of 3-in. bits on 1¼-in. steel was going the wrong way, due to the higher drilling velocities obtained when using smaller insert bits.

W. R. Bobbitt, Radford Limestone Co., Inc., said that the inserts loosened and the gauge also wore, so he turned the insert end for end and brazed it with a flame torch back in the shoulder of the steel. He also said that if anyone wanted to come down to see how he did this, they were most welcome. Mr. Bobbitt was also interested in 3-in. bits and it was explained that when sufficient marketing interest was evidenced that makers of tungsten carbide bits would supply the needs.

One operator asked if tungsten carbide bits had ever been tipped onto solid steel. Mr. McCormack said that in Europe, this was the original practice but it was much inferior to U. S. practices, as the factory can do a better job with detachable bits. Bruce S. Campbell, Harry T. Campbell Sons' Corp., asked if the bits were used wet and it was answered in the affirmative. Mr. Bobbitt again took the floor to explain that parts of his stone were extremely hard and that changing steel to keep the steel cool was being practiced at his operation.

New Drilling Methods

The second question asked from the floor related to any new methods of drilling that were adopted during the past year. M. Bovee, General Crushed Stone Co., spoke briefly of using a Quarrymaster drill in a hard trap rock, that drilled 3½ times as fast as a conventional well drill (For a complete description of the Quarrymaster drill see ROCK PRODUCTS, March 1948, page 78). M. Price, General Crushed Stone Co., told of his experience with the Rockmaster at the company's Le-Roy operation. He said they drilled at the rate of 15 ft. per hour and had no steel breakage there, but that at the White Haven plant there was some trouble in that regard. He said up to 3750 ft. was gotten from one bit and that preference was for the "long" bit or Gill style as it seemed to have an advantage in drilling speed over other types to the extent of about 3 ft. more per hour. It was called to the attention of the audience that General Crushed Stone Co. had ordered its second Rockmaster.

J. B. Martin of the Joy Manufacturing Co. told of his company's rotary drill. He said this type of drill used a roller cone and water removed the chips. The equipment was a development from oil well drilling in the West. He said the machine was a self-propelled unit and had the following mechanical features (to mention a few): (1) An increased drilling speed over other types of drills; (2) Low footage drilling costs; (3) Required fewer men on the drill force; and (4) The machine drilled straight holes with smooth walls and that such holes had an advantage when being loaded. He claimed 3 to 1 and up to 4½ to 1 on drilling speeds as compared to other types. In answer to a question from the chairman, Mr. Cooke, it developed that holes of 225 ft. were deepest drilled to date, but that other holes almost as deep had been drilled and all the holes had straight smooth walls. Frank M. Capp, Joy Manufacturing Co., said that holes 2500 ft. deep in soft limestone might conceivably be drilled with one bit. The holes drilled by this unit were 6½ in. in dia. and such a roller type bit costs $105, as compared to $250 to $300 for a carbide insert bit of about the same size range. It was also brought out that a rotary drill in soft limestone would drill at a cost of 15 to 30 cents per ft.; in dense limestone

it would be around 60 to 70 cents per ft. and, in dolomites, $1 per ft. and that savings up to 25 to 35 percent could be effected by using that type of drill. Another operator said that his company had two rotaries in operation in a limestone that contained about 30 percent silica. Bruce Campbell asked for comparative costs of each type of drill (rotary and Quarrymaster) but none were given. Mr. Capp said that in one quarry there were five churn drills that drilled at the rate of 1½ ft. per hour and that a rotary drill drilled 7 ft. per hour. He said that cracks in the rock being drilled did not affect the performance and that once a hole is started it can usually be finished with no lost holes.

David Duncan told the audience of a self-contained drill that was being used in the oil fields. This drill made a 9-in. hole, was motor driven, had a rotary action, had a pump as part of the assembly and the whole unit was lowered in the hole as drilling developed. Mr. McCormack said it was a "mud machine" and not a rotary and that it was for deep holes in the 1000 to 1500 ft. (or deeper) range and was not economical except for very deep holes.

Blasting

George Lott, Jr. took over the chair for the balance of the operating session. He said that only a few of the questions on blasting would be asked at this time, for later in the program vibration experts would be available to answer questions concerned with vibrations and short time delay blasting. The first question asked was "Would delay caps in the bottom charge assist in removing the toe" and L. F. Miller, New York Trap Rock Corp., answered "why use a delay." Instead he said to kick out the bottom first and the tumbling stone from above would assist in fragmentation and that it was a mistake to shoot the top first.

A four part question was brought up for discussion as follows: (1) Is it possible to pull the toe with well drill holes stopped at quarry grade? (2) Would springing help? (3) Is drilling below grade the only way to blow out the toe? and (4) How does drilling below grade affect the vibration? The general conclusion was that it was better to drill below grade, although one answered to the contrary.

In a discussion of well drill vs. bench drilling on high faces, chairman Lott said his company was using wagon drills and Carset bits on a bench system and that it required an additional shovel. Greer Tomlins, New York Trap Rock Corp., asked what was the maximum spacing and burden recommended for an 80-ft. face with 9-in. drill holes. B. R. Maloney, DuPont Co., told of the use of 22-ft. burden and 24-ft. spacing and of shooting the bottom out first with delays. Another told of shooting four holes on a 75- to 80-ft. face and with two or three snake holes drilled with water liner drills under each churn drill hole. The holes were deck-loaded and shot so that the snake hole and the bottom went with the first delay followed by the top. The second hole then went, in a similar sequence along with its snake hole, followed by its top.

L. F. Miller, New York Trap Rock Corp., asked how cracks, seams, and overhanging stones could be removed in the safest manner without the use of explosives. Mr. Cooke suggested the use of the drop ball and he also mentioned a grappling iron to do this work. Another told of using a drag scraper to drag down the face but we should here point out that this was used in a very special case that would have few applications in the crushed stone industry.

V. F. Masson, Carbon Limestone Co., asked whether it would be practical to use delay electric timers on 2-in. holes, 7- x 7-ft. spacing, 21-ft. deep with 180 holes in one shot, and a representative of the DuPont Co. said that there was no advantage, mainly because the hook-up would be too complicated and it would be too hard to keep the wires intact during the progress of a shot.

The question was asked if it was practical to use tractor-drawn scrapers or carryalls for stripping and one speaker said that it was very practical.

Drop Balls

Nelson Severinghaus asked for a discussion on drop ball equipment and operating technique and Mr. Cooke said that the hitch was the vital part. Oliver A. Haskins, Zenith Dredge Co., asked for more details on Mr. Cooke's hitch and Mr. Cooke told of the drop ball he was using that had a replaceable bottom. This ball has a top section weighing 5000 lb. and a bottom section weighing 1200 lb. The faces of the two sections, where they join, are machined and a large champered groove is cut at the periphery and this groove is filled with welding metal. It takes about 10 hr. to do the welding job and by that time the drop ball is quite hot so the unit is lowered in a 36-in. concrete pipe (vertically) and lime filled around the open spaces. Mr. Cooke said that he had welded his third bottom on one drop ball and that the idea was practical. The type of welding rods to use depends on the metal to be welded, and he said those recommended by a reliable welding company were usually satisfactory. He said his ball had 0.4 to 0.5 carbon steel top section and the bottom was Cr-Mo-Ni alloy steel.

Electric Cable

F. J. Buffington, New York Trap Rock Corp., asked regarding the best kind of portable trailer cable from an operating and safety standpoint when used in connection with high voltage (2300 volt) shovels. On a showing of hands, about 15 operators used one cable and five used conductors made up of several cables. Mr. Cooke said multiple cables are repaired at his quarry, first, on a temporary basis, and are later re-vulcanized. One operator said it took him about two hours to repair a multiple cable and he averaged about two breaks per year.

As to the best type of cable to use, the answers appeared to be divided and vague but one or two spoke of having electrical equipment so designed that if a ground leak occurred it would open a relay.

Quarry Haulage

Oscar Benson, General Crushed Stone Co., requested a discussion of the different types of quarry haulage. Mr. Cooke seemed to favor diesel-powered trucks on any inclines. One operator said he used 0.7 gal. of diesel fuel per hour on a 1200-ft. haul. Bruce Campbell said his Mack gaso-

Left to right: Ed Weese, F. B. Thatcher, president, and L. M. Nauss, of the Carbon Limestone Co., Youngstown, Ohio

Horace Krause, left, and Henry Huschke, president and managing director respectively, Agricultural Limestone Institute

line trucks were doing a good job on grades that were around 11 percent for several hundred feet with other grades in the 8 percent range. He pointed out that the gasoline driven trucks were cheaper as regard first cost. He mentioned that when investigating various haulage units in his operation, two 15 to 16 ton diesels would do the job and they would cost about $15,000 each. He said he could buy four such trucks and even then the investment would not be as much as a belt conveyor system. He also pointed out that if a belt conveyor stops, everything stops.

The discussion here brought out the observation that trucks should last 3 to 10 years. This was a wide spread in age, but it was explained that low-priced trucks got low usage. Bruce Campbell said his four Mack trucks were 11 years old and still working satisfactorily.

Riprap

M. C. Dow, New York Trap Rock Corp., asked for discussion on (1) the best methods of handling riprap from 50 lb. to 15 tons in size, (2) the maximum size that can be handled with clamshell and orange peel buckets, (3) the practicality of two and four prong grabs and (4) the best use for cable and chain slings. One operator told of using a 15-ton Whirley to handle 12-ton stone using an Owens grapple. He said it worked satisfactorily. Another spoke of using a 4-prong unit in the quarry but chains were used for loading boats. Another told of drilling a shallow hole in the rock and using a sort of expansion shield augmented by chains. Oliver A. Haskins gave his experiences that embraced the use of clamshell rigs, Owens grapples, cables, chain and rings, etc. He said the 3-pronged grapple was the best since the greater the number of arms, the more are the chances of breakage and wear at the hinges. He spoke of using Euclid trucks that dumped into a flat car. The flat car had a ring of 8- by 8-in. timber around it so the truck could dump easily. The bed of the flat car was covered with a few inches of crushed rock to help absorb the shock from dumping. He said the cars held 30 to 40 tons and the haul was 35 miles. Slings and skips were used for the smaller sized riprap. He also briefly described his method of handling stone that weighed up to 35 tons. These had two holes drilled through them and, by means of chains and bars, would be lowered under water. When the slack came on the slings, the large rock would drop off. The rods were not recoverable.

Surge Piles

John Kawaske, Callanan Road Improvement Co., asked about the advantages of a surge pile between primary and secondary crushers. It was pointed out that a surge pile here evens out the flow of stone, that delays in the quarry are not reflected to the plant, that power demands for two-stage operations are more favorable to the operator, and that the operation (as a whole), can, if desired, be divided into two distinct operations and use one crew for both operations, but at different times.

Nelson Severinghaus asked for a discussion of the best method of breaking hangups in the primary crusher. He said he used two air cylinders in place of a single cylinder as it had obvious advantages. Mr. Cooke preferred to use a rotary air hoist as the power was great enough to do the job, yet it would not damage the chains, slings, or straighten out the hooks used. The question came up regarding scalping out the fines ahead of a surge pile to lessen freezing troubles, and a question was asked about clay in surge-piled stone. One operator said the fines banked up in his surge pile and that he reamed them out at the unloading points at intervals using a shovel. He said he dry screened but rinsed at the loading point. Mr. Dow asked about the minimum size a surge pile should be and it was indicated that a surge pile should be large enough to hold at least one day's quarry production, and, the size therefore will depend on the size of the plant.

L. A. Rhodes, Jeffrey Mfg. Co., called the group's attention to a questionnaire being sent out by the American Institute of Mining and Metallurgical Engineers relating to production problems and urged all to give the form considerable thought when it arrived, for the data would later be summarized and published and would be of value to the industry.

Asphaltic Concrete Pavements

Following the reports of the auditing, by-laws and nominating committee, E. F. Kelley, Chief, Division of Physical Research, Public Roads Administration, Federal Works Agency, Washington, D. C., spoke on the subject "Some Factors Which Affect the Performance of Asphaltic Concrete Pavements." His talk was of a very general nature pointing out that about 90 percent of an asphaltic concrete road is aggregates and mineral filler. He defined asphaltic concrete as a road building material prepared from a high temperature asphalt, and rolled hot. He mentioned that some aggregates have more affinity for water than they do for asphalt. He defined stripping as where the film loosens due to loss of adhesion and the asphalt stripped from the aggregate. He said there were several anti-stripping compounds available that are essentially "wetting agents" and they improve the adhesion of asphalt to the aggregate and that some were very effective. He said that limestone dust was satisfactory for use as a mineral filler, also portland cement, some trap rock dusts, and fly ash.

The speaker discussed briefly different types of asphalt and pointed out that as a generalization, it was bad practice to heat asphalt too hot and to use an arbitrary temperature, but to use that temperature recommended by the company which supplied the black top material. He said that mineral fillers were to increase the density of the mix.

Soviet-American Crisis

Leland Stowe, veteran foreign correspondent and Pulitzer Prize winning journalist of New York, N. Y., spoke on February 8 on "The Meaning of the Soviet-American Crisis," and based his remarks on observations resulting from many years of travel in Europe and Russia. He said the odds were against a war with Russia, barring a great accident, or a big depression. He said it would take Russia 20 to 25 years to get ready to fight and called attention to the fact that Joe Stalin won't live forever, and when he does pass on, there will

W. J. Sparks, Central Rock Co., Lexington, Ky., was snapped at the registration desk

The delegation of General Crushed Stone Co. was one of the largest at the convention. John Rice, oldest living past president, with cane, is seated to left of President Otho Graves. On his right is John Rice, Jr., and on Mr. Graves' left is Oscar Benson

be a struggle in Russia for personal power that will keep those in authority too busy to want a big war on their hands.

Our observation was that Mr. Stowe's talk would tend to lead us to lower our guard.

He said that it was false to assume that if we are to go into war that it should be done now, pointing out that if we do have a war, we are the only ones who have anything to lose and that military dictatorship during an atomic war, and loss of the free enterprise system would be inevitable. It would be a case of super-regulations, super-controlled, he thought. He came up with an interesting figure as to the probable cost of a third World War. This figure, he said, was arrived at by a committee investigating the subject. It was $2,600,000,000,000 or 2 trillion, six hundred billion dollars. This contrasts with $30 billion for the first world war and $300 billion for world war II.

The speaker cautioned his hearers that if a war with Russia did develop that bacteriological warfare could result. He said, in reference to the situation in China, "so what?"—China cannot be quickly, if ever re-organized, and that the countries of the world have ten or more years to work out some method of preventing wars. He was highly complimentary to Dean Acheson, the new secretary of state.

Aggregates for Durable Concrete

Aggregates for Durable Concrete

THE AGGREGATES INDUSTRIES in recent months have been greatly concerned by the aggregates requirements as set forth by the U. S. Corps of Engineers for large concrete structures. There have been many rejections and changes in specifications during progress of filling contracts, so the National Crushed Stone Association was fortunate in having a paper, "The U. S. Corps of Engineers Approach to More Durable Concrete," presented by Jesse R. Gilbert, Concrete Division, Corps of Engineers, U. S. Department of Defense, Gravelly Point, Va. Mr. Gilbert dealt largely with justifying the U. S. Corps of Engineers specifications for aggregates in their relation to durability of concrete and gave a rational presentation as to the reasons for the requirements now in effect. He made it clear that there was no discrimination intended in the selection of aggregates and that selection, in each case, was based entirely upon factual data and economics. He was frank in admitting that some mistakes have been made and, in opening his remarks, said that he welcomed the opportunity to discuss and clarify the subject in view of all the comment the specifications have created. He credited much of the misunderstandings to lack of knowledge of the ultimate goal of the civil works construction program.

The Corps of Engineers is an organization of builders, he said, which must place millions of cubic yards of concrete in all types of hydraulic structures all over the United States. This concrete is designed, manufactured, placed, finished and cured with many new techniques and procedures. He pointed to surveys of existing projects that have revealed an alarming lack of durability of concrete after relatively few years of service. The ingredients, the mixing, placing and curing operations all may be contributing to non-durability. As a result of these surveys concrete technology has been initiated on an unprecedented scale, laboratory facilities and techniques are being expanded, and new construction procedures have been developed.

The Corps of Engineers has adopted a policy of performing proper preliminary investigation, planning, design and construction of all civil works projects and has assumed a place in the field of advanced and improved concrete technology.

The concrete research laboratory at Clinton, Miss., a branch of the Waterways Experiment Station at Vicksburg, Miss., is the "proving ground" for all other Corps of Engineers concrete laboratories. Development and standardization of all laboratory equipment and procedures is accomplished at Clinton. The Concrete Research Division will spend, during the fiscal year 1949, about

Mr. and Mrs. S. P. Moore, Concrete Materials and Construction Co., Cedar Rapids, Iowa

$300,000 on basic concrete research, special studies of air-entrained mass concrete and aggregates for such concrete, alkali-aggregate reaction, permeability, grouting, uplift, special cements, etc.

Six regional laboratories have been established, at Atlanta, Ga.; Dallas, Texas; Oakland, Calif.; Portland, Ore.; Omaha, Neb.; and Cincinnati, Ohio. These laboratories will conduct full investigations of all the materials including aggregates proposed for use and will submit test results to the Chief of Engineers in Washington for approval prior to advertising that project for bids. Mr. Gilbert further cited why service must be extensive and complete and must be obtained from structures of comparable functions and degree of exposure to be valid. Mr. Gilbert further stated:

"Before proceeding directly to the discussion of concrete aggregates which, I am sure, is of direct interest to you gentlemen of the crushed stone industry, I would like to mention briefly several events of the past few years that were initiated by the Corps of Engineers for the sole purpose of promoting more durable concrete for Civil Works structures through the medium of improved construction equipment and procedures.

"(1) Concrete Buckets—Cite need for improved concrete bucket to satisfactorily handle air-entrained mass concrete mixes and procedures which led to the availability of three commercial buckets approved for use.

"(2) Consistency Meters—Cite need for a consistency meter which could be used with *any* mixer to control uniformity of concrete mixtures and developments to date.

"(3) Vacuum Finishing and Prepakt Concrete—Cite need for development work as related to mass concrete and outline developments to date.

"(4) Annual Concrete Conference—Cite reason for conference. Review briefly the program for 1949 session on 1, 2, and 3 March, 1949, and extend an invitation to any members of the crushed stone industry in the vicinity of Kansas City, Mo., to attend this conference.

"(5) Concrete Aggregates—In discussing this subject, I would like to begin by re-emphasizing the present policy of the Corps of Engineers relative to the investigation and approval of any source of concrete aggregates for Civil Works projects.

"It is the intent of the Corps of Engineers to use the best construction materials, including concrete aggregates, locally and economically available to any particular construction project. It is not the intent of the Corps of Engineers to require concrete aggregates of vastly superior quality at the expense of greatly increasing the cost of any project. Many factors, however, enter into the determination of what is meant by the term "locally and economically available." Obviously, a large multiple purpose project designed for important functions and expected to last for many years would justify the imposition of more rigid requirements for concrete aggregate than a smaller flood control structure which could be repaired or replaced in a relatively few years.

"The scope of this policy includes two very important factors in the endeavor to obtain "more durable concrete," (1) quality of the material, and (2) mechanical gradation and uniformity of material.

"*Quality.* I would like to digress for a moment to answer a question which has been asked me so many times in recent years by engineers and aggregate producers. 'If air-entrainment has so greatly increased the durability of concrete, why bother about the quality of the aggregates?' Gentlemen, the answer is simple. Air-entrainment is no 'cure-all.' It does improve the durability of concrete, but inferior aggregates or reactive aggregates remain inferior or reactive in the finished product. There is no substitute for top quality materials.

"The determination of the quality of the material is, in some instances, twofold. Both the 'service record' of the material in concrete and the behavior of the material in concrete in laboratory tests play important parts in the determination of an approved source of aggregates for any work. Sometimes when the data on one of them is lacking, the other must be used in rendering a decision relative to the quality of the materials."

Mr. Gilbert cited why service records must be extensive and complete and must be obtained from structures of comparable functions and degree of exposure to be valid.

In commenting on laboratory tests, he said: "As many of you are aware, the Corps of Engineers is unique in the respect that no contract specification issued for Civil Works construction contains any performance limits for concrete or concrete materials with the exception of gradation and uniformity requirements for the concrete aggregates and the amount of air entrained in the concrete.

"Gone are the conventional limits for sulphate and abrasion losses. Gone are the limits for absorption and deleterious substances. All references to slump, concrete strengths, minimum cement contents and maximum water contents have been deleted.

"The absence of specific limits of any 'conventional' nature in contract specifications for the Corps of Engineers civil works program is entirely intentional. It is a policy which was adopted after long and careful consideration of all factors involved. Regional variation in quality of materials and the variation in demand for quality from structure to structure and region to region is believed ample justification for such a policy. It is desired at this point to further emphasize that test results, as used by the Corps of Engineers, in evaluating acceptable concrete aggregates, are used in a qualitative manner only. Actual quantitative results of laboratory tests have no particular bearing on the selection of concrete aggregates. To illustrate, any effort to establish a limit for magnesium sulphate, absorption, abrasion, or any other tests with the idea that any material meeting such a limit would be acceptable for use in concrete, or that all materials failing to meet it would be unacceptable, is a fallacy. It is only after all such tests have been completed on several different concrete aggregates that such results can be used to determine which materials are acceptable for the work. It is conceivable that concrete aggregates, which greatly exceed a normal absorption limit and which have a relatively high loss in the sulphate test, would still be acceptable for work contemplated in a particular area if this material compared more favorably than all other aggregates economically located when evaluated by the overall test program.

"Before outlining the Corps of Engineers test methods for determining the quality of concrete aggregates, I would like to 'highlight' one fact.

Mr. and Mrs. L. F. Miller, New York Trap Rock Corp.

All of the test procedures used by the Corps of Engineers in evaluating the acceptability of concrete aggregates are tools only and are used as tools in the investigation to determine the acceptability of one or more material over all others locally available for the work contemplated. No effort is made to simulate actual conditions to which concrete structures are subjected in the field. It is admitted that much remains to be determined with regard to method of tests for aggregate selection and that the methods now available do not provide a perfect or uniformly conclusive basis for aggregate selection in all cases. It is, however, believed that the procedures used by the Corps of Engineers are the best which are available and represent progress over those which have been used in the past.

"I will not go into detail on the routine 'conventional' tests for concrete aggregates. I am sure you are all familiar with the tests for sulphate. Suffice to say that all of these tests are conducted and the results are carefully considered in the final approval of any material.

"We are more keenly interested in the following:

(1) The physical properties and the mineral constituents of the material and the possibility of the occurrence of harmful chemical reaction between certain of these constituents and the alkali in the cement.

(2) The behavior of the materials in concrete when subjected to weathering tests.

(3) The thermal properties of the materials and their effects on concrete.

"The importance of geology and petrography were not fully realized in former years. These sciences are now essential elements of any complete aggregate investigation. The geology of the region in which the structure is to be built often exerts a major influence on the type of aggregates to be used since the selection of the material must, from economic necessity, be limited to that region except in instances where a petrographic examination indicates the local materials to consist of extremely weathered, soft, porous or structurally weak elements or when it can be demonstrated that the materials contain deleterious amounts of chemically reactive constituents.

Mr. and Mrs. J. Kouaske, South Bethlehem, N. Y.

"In areas where no gravel exists or where the maximum size of the gravel is small, the choice of coarse aggregate is at once limited to crushed stone. In some areas of the mid-continent, limestone is the only rock to be quarried. In parts of the North Pacific States only volcanic rocks and sand and gravel composed of volcanic rocks are available for concrete aggregates. In some areas of the Gulf and Atlantic coastal plains, no large gravel exists and there is little or no consolidated bed rock from which aggregates can be manufactured.

"Petrographic examinations of proposed concrete aggregates usually consist of the two folowing phases:

(1) Preliminary Petrographic Analysis. A preliminary investigation should usually eliminate from further consideration those sources consisting of extremely weathered, soft, porous, mechanically weak aggregates or those containing constituents which are known to be deleteriously reactive.

(2) Detailed Petrographic Analysis. This analysis is much more complete and furnishes detailed data on the qualitative and quantitative presence of the individual rock and mineral types in the material. The importance of conducting a detailed petrographic analysis cannot be too strongly emphasized. As an example, a preliminary examination of test samples of ledge rock from two quarries located a few miles apart in North Carolina indicated that both materials were granite gneiss and both were apparently similar in nature. A detailed analysis indicated that while one material was a normal granite type, the other material had a well-developed network of microscopic cracks. Elementary physical tests on these two materials developed no marked differences but when concrete specimens made with each were tested in freezing and thawing, those specimens containing the normal granite showed a durability factor of 75 after 300 cycles, whereas those specimens made with the granite containing microscopic cracks showed a durability factor of only 17. It must be concluded that the cracks permitted water to penetrate the aggregate particles and rapid failure in freezing and thawing was the result.

"Many other factors may be learned from a detailed petrographic analysis. Reactive constituents are opal (chemically-amorphous silica), natural glass (also artificial glass), chalcedony (interstitial material in microfibrous form of quartz).

"Some granites are extremely susceptible to disintegration during freezing and thawing. Some traprock contains alteration products that causes the rock to swell and disintegrate in water. Some basalts contain natural glass that will react deleteriously with minor alkalies in cement. Some schists are weathered and contain well developed planes of weakness which provide access for water. Some quartzites are bonded by opal. Some sandstones are very porous. Some limestones contain interbedded shale and chert or contain thinly bedded partings filled with clay.

Apparently enjoying the convention were Betsy, left, and Mrs. A. R. Wilson, president, Granite Rock Co., Watsonville, Calif.

"Laboratory investigation on the thermal properties of aggregate and concrete is conducted principally for the purpose of determining the proper technical approach in designing a mass concrete structure as economically as possible but one which will be solid, durable, impermeable and monolithic and which will resist all forces exerted upon it.

"Thermal Properties properly fall in two categories:

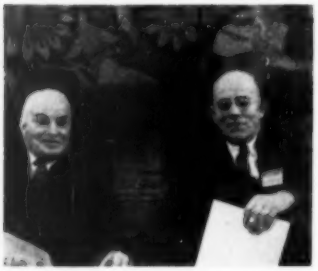
"(1) Structural—such as the temperature rise and the coefficient of expansion of the concrete.

"(2) Material—such as the differential coefficients of thermal expansion of ingredients of the concrete, the diffusivity and specific heats of concretes and aggregates and the thermal properties related to the hydration of cement.

"While the design and control of mass concrete mixes to reduce temperature rises and consequent volume change and attendant cracking plays an important role in promoting more durable concrete, time will not permit me to discuss it here.

"In the design of a major concrete structure, such as a dam, the coefficient of expansion of the concrete is important in the calculation of stresses in the concrete and the abutments due to temperature changes. The primary factor controlling the coefficient of expansion of mass concrete is the coefficient or coefficients of expansion of the aggregates—principally the coarse aggregates—since the aggregates comprise between 80 and 90 percent by weight, of mass concrete. These values may run from about 3×10^{-6} for most limestones to 7×10^{-6} deg. F. for a siliceous aggregate having a high coefficient of thermal expansion.

"In this connection, laboratory tests have shown that differences between the coefficients of expansion of the



R. G. L. Harstone, left, and R. W. Cunningham, Canada Crushed Stone, Ltd.

coarse aggregates and the mortars show an inverse relation to the durability of the concrete in severe weathering exposures. It must be concluded, therefore, that a large difference between these coefficients should be avoided since the stresses set up at the interfaces of coarse aggregate particles and mortar can be sufficient to cause loss of bond and radial cracking from the interface which will eventually destroy watertightness in hydraulic structures.

Thermal Diffusivity

"Thermal Diffusivity is a measure of the rate at which heat will be lost or gained by the concrete. It is used in computing the time necessary for a structure to attain final temperature, and the rate that it will cool or heat due to external thermal influences. The thermal diffusivity of the concrete is dependent principally upon the type and the amount of aggregates in the concrete. Values for this coefficient vary from about 0.030 ft. 2 hr. for concrete containing basalt aggregates to about 0.125 ft. 2 hr. for concrete containing chert aggregates. It will take, therefore, several times as long for a comparable temperature change to occur in the former concrete as in the latter.

"Specific heat is a measure of the capacity of substance to store heat. A knowledge of the specific heat is necessary in calculating the theoretical adiabatic temperature rise from the heat of hydration of the cement. A high specific heat is of great advantage in mass concrete since it limits the temperature rise.

Alkali Reactivity Tests

"I have already briefly mentioned the constituents of mineral aggregates which have been found to combine chemically with the alkalies in cements to form silica gels within the mass of hardening concrete. When these gels absorb moisture, the ensuing expansions cause hydrostatic pressure and rupture of the concrete.

"The Corps of Engineers uses two well known tests to determine possible alkali reactivity.

(1) The mortar bar expansion test developed by the A.S.T.M.

Length Change (percent)	Reactivity
0.002 or less	Non reactive
0.02—0.04	Negligible reactivity
0.04—0.10	Probably reactive
-.10—over	Reactive

(2.) A slightly modified version of the accelerated chemical test proposed by the Bureau of Reclamation.

"No one test of alkali reactivity of aggregates has yet proven sufficiently dependable to suggest that it can be used alone in judging the suitability of aggregates for use in concrete structures. It is necessary to evaluate the combined findings of petrographic examinations, mortar-bar expansion tests and accelerated chemical tests to find a basis for acceptance or rejection of aggregates."

In discussing weathering tests for concrete, Mr. Gilbert mentioned accelerated freezing and thawing tests, briefly described the test and cited specimens required for evaluation of any one combination of aggregates. The test subjects concrete specimens to ranges from 0 to 40 deg. F. twelve times a day, which gives comparable bases quickly. He also cited the need for heating, cooling, wetting and drying tests. Non-freezing weathering tests were developed for concrete never exposed to freezing and thawing.

In commenting on the gradation and uniformity of concrete aggregates, he said: "Gentlemen, I am sure that many of you are familiar with the gradations requirements in the Guide Specifications for concrete for Civil Works. Some of you are familiar with the more recent modifications of these requirements which have appeared in contract specifications for dams now being advertised. These modifications have been accomplished as the result of experience in the production of aggregates and the design, manufacture and placement of concrete.

"I will not presume to tell you gentlemen of the crushed stone industry that we know all there is to know about concrete aggregates. We are learning, however, and learning the hard way. We are manufacturing aggregates from limestone, quartzite, granite, traprock, diorite and basalt. We are processing natural aggregates from many different types of deposits.

"The gradation of the materials, the particle shape and the uniformity of the materials from batch to batch and from day to day all play vital parts in the promotion of 'more durable concrete.'

"Low water-cement ratios in lean mass concrete mixes are mandatory in order to maintain durability, strength and impermeability.

"Paths for percolating water through concrete structures are formed by:

"(1) Inter-sand voids which increase rapidly in size with high water-cement ratios.

"(2) Voids in the high water-cement ratio film found on the under side of large particles of gravel or rock.

"(3) In order to obtain low water-cement ratio concrete, the gradation, particle shape and uniformity of concrete aggregates, particularly the fine aggregate, must be carefully controlled. A large quantity of minus 100-mesh material in the fine aggregate inhibits the entrainment of air and increases the demand for water. This also holds true when the sum of the percentages between the No. 30 and No. 100 sieves is not sufficiently high. If the sum of the percentages between the No. 4 and No. 16 sieves is not maintained low, the mix is harsh and the demand for water is increased.

"Our specification gradations and uniformity requirements are rigid. They were planned that way. We are involved in constructing mass concrete dams, some of which are over 400 ft. high. If we eliminate forced cooling, as was used at Boulder Dam, in these structures, we can save millions of dollars but, we must control the placing temperature of the concrete and we must reduce the sand, cement and water content of the mixtures to the absolute minimum consistent with proper placeability. Air-entrainment has helped. Careful control of gradation and uniformity requirements will do the rest.

"We are fully aware of the economic importance of relaxing these requirements somewhat for less important work. We are doing that for jobs in all parts of the country. We have no 'ideal gradation.' Each project is planned and controlled with requirements peculiar to that job alone. We also realize the necessity for different gradation requirements for fine aggregates depending upon whether natural or manufactured materials are to be used."

In commenting aside from his prepared paper, Mr. Gilbert said that

(Continued on page 110)

J. Reid Callanan, left, and C. A. Gustafson, Callanan Road Improvement Co.

Quarry Sandstone To Process Silica

Sun Sand Co., Thayer, W. Va., has adapted western mining practices to silica sand operation. Delivery to plant is via a 4000-ft tramway

General view of Sun Sand Co., overlooking the New river. Tramway from quarry to plant comes down above upper mill structure at left

POLISHING the head of a piece of hand drill steel with a "Single Jack," in a Colorado gold mine, and running a silica sand crushing and grinding plant may, to some, appear like two widely divergent commercial endeavors; but at the Sun Sand Co., Thayer, W. Va., many points of similarity can be seen. At least there is enough of a similarity so that a former Cripple Creek gold miner and lessee has been content to stay there for 27 years, be satisfied with the change, and, incidentally, during those years build up a successful business.

To visit "The Campbells," as they are affectionately known to the silica industry, is like inhaling a breath of the old gold mining days of "The Creek," Georgetown, Creed, Breckenridge—all mining towns in Colorado which are now practically in their last stages of life. Harte Campbell, son of E. J. Campbell, was born in Manitou, Colo., at the foot of Pike's Peak. Even in the son's name visions of the old west creep in, for Harte Campbell was named after Brete Harte, beloved writer of the West.

E. J. Campbell, or, "The Boss," as he is referred to at Thayer, lived in Cripple Creek when such mines as the Cresson were producing gold ore of fantastic value. Leasing was the goal of most miners, for by leasing a certain block of ground, in or near a mine that had reputation for producing "high grade," the lessee, working on a percentage basis, always had a chance to make a strike and come out of the mines a wealthy man.

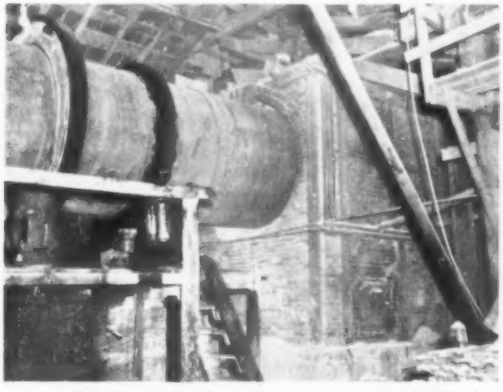
It took men of great physical strength and endurance to be lessees. Much of the work was done without power tools and the lessees had to be content to strike a piece of hand steel, hours on end, with an old single jack, or double jack—sledge hammers to silica folks. Besides physical strength the men had to have courage and be willing to often work a year or more for reward. All too often the supposed ore would return a "trace" assay, but not easily discouraged, the lessees kept on.

Silica mining in an atmosphere with tinges of the old days, is found at Thayer. Even the setting of the plant, which is tucked away in the high, rugged hills of West Virginia and isolated as most Western camps, is remindful of the higher and more rugged Rockies. There with books and faded photographs taken decades ago as a back drop, the Campbells will gladly help you live the old days over again.

About 30 years ago, the senior Mr. Campbell leased a gold or silver mine in Colorado, owned by Eastern people. The same group owned the present Sun Sand Co. First operations at Thayer had many problems and in that rugged West Virginia setting it would take a rugged person to get the kinks worked out of the sand operation. The owners of the sand company asked Mr. Campbell to go East, take a look at the set-up, and make recommendations. Soon thereafter, he and his family, now in its third generation, moved to Thayer and have lived there ever since.

4000-ft. Tramway

To bring the hard, tough sandstone down from the top of the mountain behind the plant called for what is



Left: New 70-in. x 40-ft. dryer installed at plant. Right: A 4- x 10-ft. rod mill, said to be the first used in the silica industry

E. J. Campbell—"The Boss"

now the longest tramway in West Virginia. It is almost 4000 ft. long and of steep gradient. The rock from which the sand is processed could well serve as a coarse concrete aggregate and is said to be one of the hardest and toughest sandstones that is processed for sand alone. The plant's entire output goes to the glass industry and is a white, minus 16-mesh product with a reasonably low iron content. It would take an old Cripple Creeker to tackle such a proposition and work it out successfully.

In the mill, western practices adapted to the newer industry can be seen. A simple plant, it has no frills and is designed to run economically. A 30- x 42-in. Buchanan jaw crusher is used at the quarry for primary grinding. The crushing plant uses a 10- x 30-in. Buchanan jaw crusher, with a No. 28 Telsmith secondary and a Symons scalper screen ahead of the secondary unit. Belt conveyors deliver the crushed rock to an 800-ton capacity storage bin ahead of the rod mill.

Harte Campbell

First to Use Rod Mill

The plant, first to use a rod mill for grinding glass sand, has a 4- by 10-ft. single-end discharge, Marcy rod mill, which discharges over a Hum-mer screen with 16-mesh cloth. The small amount of oversize is returned. Classification of the sand and preliminary dewatering is via another western development—Akins spirals, and three of these are used. The spirals deliver via belt conveyors to any of seven storage and drainage silos, in the bottom of which are four heavy screw conveyors. The screws operate in batteries of two; thus if a piece of foreign material gets into one set of screws, the bins can be emptied by the other two and the obstruction removed. In these bins the excess water drains off to waste.

Coal-Fired Dryer

For drying, the company recently completed installation of a new 70-in. by 40-ft., Hardinge dryer which is coal fired by a Combustioneer stoker made by the Steel Products Engineering Co. of Springfield, Ohio. The company is experimenting with the use of heavy wire screen lifter plates in the feed end of the dryer. These are expected to break up the damp masses of sand and thereby increase the dryer's production.

In the quarry atop the mountain there is very little overburden. A 41-B Bucyrus-Erie electric and a 75-B Lorain gas shovel excavate the sand; gas and diesel locomotives are used for haulage. About a mile of trackage is involved.

The Sun Sand Co. is said to be the first company in the silica sand industry to use Atlas delay caps which are working out very satisfactory at this operation. Drilling is done by wagons drills using Ingersoll-Rand jackbits.

Record Tonnages of Non-Metallics in 1948

OUTPUT OF MINES in the United States reached an all-time peak value of $15.6 billion in 1948, 26 percent above the 1947 record of $12.4 billion, according to a report by Secretary of the Interior J. A. Krug.

Nonmetallic minerals were in strong demand during 1948, output reaching an estimated dollar value of $1.8 billion compared with $1.6 billion in 1947. All-time record shipments were made of lime, phosphate rock, potash, cement, gypsum, stone, barite, talc and vermiculite. A 16 percent gain in production of gypsum was recorded, and cement sales climbed 7 percent. Stone quarries and sand and gravel pits yielded larger quantities than in 1947, and output was stepped up for pumice, vermiculite, and perlite.

Continuity of farm income at record levels was reflected in great demand for fertilizer. Output of phosphate rock and potash increased 5 and 7 percent, respectively, in 1948, setting new records. Supplies of potash remained scarce throughout the year, but in the closing months, production of phosphate rock appeared to have equalled demand.

Lime was shipped in record quantities in 1948. Fluorspar shipments continued at high levels, but were slightly under the peacetime record established in 1947. Barite purchases by oil-well drillers and chemical manufacturers neared the million-ton mark.

Increased mechanization of feldspar mines and mills helped effect a greater output in 1948 compared with 1947. Demand for feldspar by potteries and porcelain enamel plants remained steady, but total shipments fell below the 1946 peak, principally because of a decline in glass container manufacture. Production of talc and pyrophyllite exceeded a half million tons.

It was estimated that 208,500,000 short tons of crushed stone were produced during 1948 as compared with a production of 207,554,790 short tons in 1947.

Sand and Gravel Freight Car Supply

COMMENTS on sand and gravel car supply by the Association of American Railroads are summarized in a letter to member companies by the National Sand and Gravel Association, Washington, D. C. Members had stated, at the last meeting of the Board of directors, that car supply in many areas was inadequate on a scale never known before, and there was complaint from every area that cars assigned to plants for loading were in poor condition. It was estimated that the sand and gravel industry was spending about $5 per car to make them suitable for loading sand and gravel, and it was also pointed out that the industry was repairing and cleaning cars which in other years would have been refused, but which now must be used.

Arthur Gass, chairman of the Car Service Division, Association of American Railroads, in his comments, did not deny that supply and conditions of cars are unsatisfactory, but emphasized that the sand and gravel industry has not been the object of special discrimination, and that he has reason to hope that the car supply will be better during 1949, both quantitatively and qualitatively. During the three-year period from October 15, 1945, to October 15, 1948, the railroads have actually lost nearly 37,000 gondola cars. In the same period, they gained nearly 35,000 hopper cars, but principal demand today is for gondolas.

SAND-LIME BRICK

Manufacturers Meet To Talk Shop

THE ANNUAL CONVENTION of the Autoclave Building Products Association, the new name of the Sand-Lime Brick Association, which now includes manufacturers of high-pressure steam-cured concrete products, met in convention at Detroit, Mich., January 27 and 28. The program was considerably handicapped by the death, two weeks earlier, of J. Morley Zander, secretary-treasurer and prime mover in the Association for many years. Further complications arose from the illness of M. W. Ferguson, president of the Association who was unable to attend. Nevertheless, there was a representative attendance, chiefly sand-lime brick manufacturers, and a helpful two-day roundtable discussion of some of the problems of the industry.

It appeared from reports of the members that the sand-lime brick industry is getting its share of the present building boom, although more block than brick are being manufactured. Some manufacturers who have also made high-pressure steam-cured concrete products have had to abandon this line temporarily because of the present shortage of portland cement.

Election of Officers

Leo J. Ryan, vice-president of the Association, presided and J. W. Van Brunt acted as temporary secretary-treasurer. The Association subsequently elected Mr. Van Brunt, president, Leo. J. Ryan, vice-president, and Carl Miller, secretary-treasurer. Other business included the usual reports of the officers and committees. A resolution was adopted and spread on the minutes of the meeting expressing the sincere sense of loss in the death of J. Morley Zander.

J. W. Van Brunt, Grand Rapids Brick Co., Grand Rapids, Mich.

Most of the program consisted of an informal discussion of the role of the calcium silicates in the sand-lime and concrete products industries by Dr. Lansing S. Wells, National Bureau of Standards and Nathan C. Rockwood, of ROCK PRODUCTS. Dr. Wells discussed and reviewed many years of research on the hydrated calcium silicates. It is obvious from this research that the cement binder in autoclaved lime and concrete products is something different from that obtained by ordinary processing and curing methods, but exactly what the nature of this calcium silicate product is probably must yet be determined.

There are evidently many different hydrous combinations of calcium and silica, and it is obvious that the result of high-pressure steam-curing is to facilitate the formation of tighter and more durable bonds between aggregates than is possible otherwise. Some such bond probably accounts for the greater durability of many of Nature's rocks and minerals as compared with concrete.

Mr. Rockwood elaborated on some of the theories he has expressed in ROCK PRODUCTS that it is possible the presence of the alkali oxides, hydrates and silicates in sand-lime or portland cement concrete products might be a distinct advantage, if the proportions of ingredients and control of reactions were favorable. This should be especially true in the case of autoclaved products, if the theory that sodium or potassium silicates help the formation of the insoluable and stable calcium monosilicate, as there seems reason to believe.

Reactive Aggregates

Carl Miller, Pacific Brick Co., Pacific, Mo., reported an interesting experience in the manufacture of portland cement concrete building blocks, in which he used silica sand and small chert gravel as aggregates This particular chert gravel is generally considered to be a particularly "reactive" aggregate when used with so-called high alkali cement in ordinary concrete. Yet these block, after autoclaving in high-pressure steam cylinders for about 8 hours, proved to have phenomenal compressive strengths. This appeared to bear out the theory that reactive aggregates properly used made a better, stronger and more durable concrete than so-called inactive aggregates.

Mr. Rockwood concluded the discussion by suggesting that there probably is no such thing as really inert or inactive aggregate, at least when used with lime or portland cement, and that it were better to direct our attention and research to making use of these reactions, than in trying to prevent them.

Plant Visit

One afternoon was devoted to a visit and thorough inspection of the new sand-lime brick plant of the Detroit Brick and Block Co., which is probably the most elaborate of its kind. The operation is particularly interesting because the lime used in the manufacture of the products is a waste product of a local acetylene plant and costs very little. An analysis of this lime sludge shows that it contains only about the equivalent of 75 percent of lime (CaO), but the impurities are largely carbon dioxide (recarbonated hydrate) and silica, so that by using about 13 percent of it, in place of 8 or 9 percent of a purer lime, apparently as good results are obtained.

The point was raised, therefore, whether sand-lime brick manufacture requires a chemical lime, which most producers are using, if the only important impurities are silica and recarbonated lime. Of course, as Dr. Wells pointed out, magnesia as an impurity is to be avoided, unless some of the new hydrated dolomitic limes are used, in which practically all the magnesia is hydrated. So far as could be learned no sand-lime brick manu-

(Continued on page 121)

Carl Miller, Pacific Brick Co., Pacific, Mo.

Overall view of Red Road plant. To the left may be seen main crushing plant, and to far left is the ready mix batcher. The concrete block plant is shown in the right foreground. Bituminous mix plant is located to the left of block and precast plants in the background

Quarrying Florida Rock Under Water

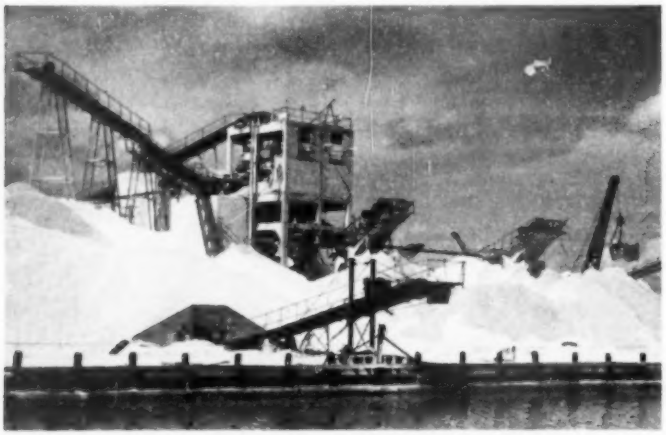
Drill blast holes in öolitic limestone under three feet of water with special rig at Maule Industries, Miami, Fla.

By W. B. LENHART

ONE of the largest aggregate producers in Florida, Maule Industries, Inc., Miami, operates two crushed stone plants that are of unusual interest.

The old plant is at Ojus, about ten miles north of Miami. It has been in operation approximately 20 years and consists of complete quarrying operations, crushing plant, a block plant operating two Besser Super Vibrapacs and a transit mix concrete setup. The latter has only recently been added to service Hollywood and environs as well as the northern part of Miami and Miami Shores.

Three years ago construction started on what is now known as the Red Road plant. This is a short distance west of Miami and directly south of Miami Airport. It was completely designed by company engineers and operations were started in May of 1946. It is a highly integrated operation involving the production of commercial aggregate transit-mixed concrete and production of concrete masonry units that include concrete block, joists, floor slabs, etc. With the crushed stone plant having a capacity of 400 tons per hour, a fleet of 65 transit-mixer trucks maneuvering for loads, two Besser Super Vibrapacs working on a 20-hr. basis making block and an asphalt plant being operated by a local contractor on the company's property, the place is a beehive of activity. Due to the heavy demands of the Miami construction industries, the company is turning out more than 6000 cu. yd. of material per day on a two-shift basis.



Conveyor for loading barges for delivery to destination

F. Paul Anderson, general superintendent, is in complete charge of all production operations both at Red Road and Ojus. He is ably assisted by E. B. Streat and S. C. Allen, who are in charge of production and maintenance, and engineering respectively. W. W. Mears is over all quarry foremen, Marion Forsyth is crusher foreman, and E. B. Mears is block plant foreman.

Blasting "Under Water"

Quarrying operations are actually carried out under water. The oolitic limestone from which the raw material is derived is obtained from several areas at the plant site. The water table is approximately three

feet below grade and is covered by a thin layer of muck and marl. This muck and marl is stripped off, pulverized by specially designed pulverizers and sold throughout the area for fertilizing yards and gardens.

After the muck is stripped off, it is frequently necessary to build up an operating area so that the drag lines will not be standing in water. Then the drilling and blasting is done in a very unique manner. Specially designed drills, using the pile driver principle, are used with excellent results. A heavy wall pipe having a 1½-in. inside diameter is driven approximately 25 ft. down into the deposit. Before driving, a cast iron pointed plug is placed in the end of the pipe, and after the pipe is down, the water pressure is neutralized by filling this pipe full of water. Then the plug is knocked out with a rod and the pipe is loaded with sixty percent 1¼-in. dia. Hercules dynamite with tubular spacers separating the sticks in the charge. The use of these spacers has proven most effective. Consumption of dynamite has been reduced approximately 30 per cent with no loss in effectiveness. These charges are placed on 4- to 6-ft. centers depending on the hardness of the rock. The loading pipe is then withdrawn and single shots are fired, for the plant is located near a residential area and this procedure has been adopted to eliminate neighbor disturbance.

After the shooting, the oolitic limestone is taken from the sub-water quarry by two P. and H. 2½-cu. yd. draglines and one 54-B Bucyrus dragline. A 2½-cu. yd. Link Belt Speeder is available for miscellaneous stripping and digging. The wet, pit-run material is piled in a windrow on the bank where it is allowed to drain for several days, prior to loading into a fleet of five Euclid bottom dumpers under contract held by the Gulf Coast Construction Co. The Euclids were designed to hold 16 cu. yd. heaped, but due to the light specific gravity of the material they have been built up with sideboards to carry 18 cu. yd. The loading of the Euclids is handled by 45-B and 38-B Bucyrus draglines.

Looking down conveyor that supplies concrete batcher. Sand drag classifiers may be seen to the left. Conveyor for car loading is shown to the extreme right, and the conveyor in the center projecting from the plant is the "rock" conveyor

Two of fleet of five bottom dump trailers that haul quarry stone to plant. These 16-cu. yd. trailers have been built up with sideboards to 18-cu. yd. capacity. The 2½-cu. yd. draglines load the trailers

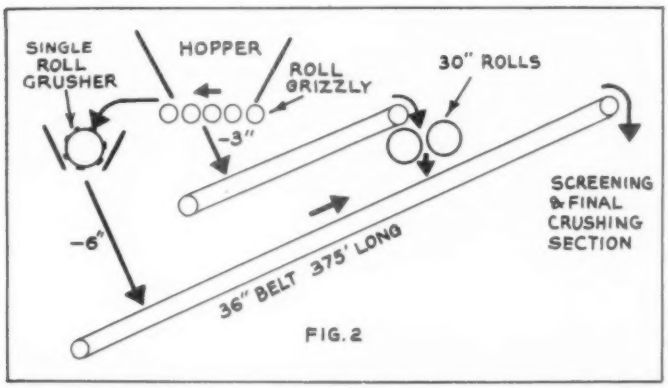


Fig. 2: Diagram of change made at primary crusher station to increase amount of concrete stone recovered at parallel screens and to better balance flow. Short belt parallel to and above long belt and 30-in. double-roll crusher were installed in order to further reduce minus 3-in. material passing the roll grizzly

Plant Changes

Although the plant has only been in operation since May, 1946, the demands of this area have caused some original designs to be changed. Operations started at the primary crusher section with a 36-x 48-in. McClanahan single roll crusher which is still in service. This crusher receives its feed from a roll grizzly under the primary feed hopper. All minus 3-in. material passes the roll grizzly and joins the crusher discharge on an inclined 36-in. belt conveyor, 375 ft. centers, which is driven directly through a D. O. James reduction unit. This long belt delivers a feed split to two No. 600 5- x 10-ft. wet Tyler-Niagara screens operating in parallel. These screens have the characteristics shown in Fig.

(Continued on page 118)

Solution of Problems In

MANUFACTURING ROCK WOOL

Part three of series of articles on processing problems encountered in the manufacture of rock wool. Discussion of cupola heat balance and fuel ratio

By VICTOR J. AZBE*

THERE IS nonconformity in the methods of evaluation of cupola heat requirements. In some cases, they are expressed as ratio of coke to raw feed; in other cases, ratio of coke to slag blown; and in still others ratio of coke to actual wool recovered. The latter is most likely correct as being all-inclusive, although when the cupola only is studied, basing its fuel efficiency on the slag blown figure may be acceptable.

Not only does the actual performance of cupolas vary greatly due to the nature of the charge and relative excellency of operation, but the evaluation methods vary also, and it is hard to ascertain the exact values of cupola fuel-ratio data.

Following are some such performance evaluations. These range widely and are inconsistent.

CUPOLA CHARGE EVALUATION

Analyses of Materials

Percent

	SiO_2	Fe_2O_3	Al_2O_3	CaO	CO_2	MgO	Carbon
Rock	35.51	3.20	9.35	14.70	21.90	10.38	—
Slag	38.44	.64	12.42	39.00	—	7.95	—
Dolomite	1.00	.32	.68	30.93	46.15	20.50	—

Coke — 8.0 percent mineral water — 1 percent volatile matter — 91.00

Hourly charge and conversion to slag and CO_2

	Hourly Charge Lb.	Slag Conversion Multiplier	Slag Lb.	CO_2 Gas Multiplier	CO_2 from Carbonate and Carbon Combustion, Lb.
Rock	2010	.7314	1469	.219	440
Slag	1200	.9845	1182	—	—
Dolomite	340	.5343	182	.4615	174
Coke	690	.08	55	.91 x 3.667	2300
Total	4240		2888		2914

Slag blown per hour (lb.)	2880
Approximate actual slag recovered (lb.)	2500
Percentage of slag recovered	87
Percentage carbonate CO_2 of total CO_2	21
Coke ratio to slag blown	4.2-1
Coke ratio to wool recovered	3.6-1
Heat value of coke (B.t.u.)	13600
B.t.u. per lb. of slag blown	3240
B.t.u. per lb. of slag recovered	3780
Daily net capacity	30 tons

RATIO LB. PER LB. OF COKE

Plant	Material	Slag blown ratio	Slag recovered ratio
A	Limestone 360, Slag 1020, Dolomite 89	3.4	3
B	Limestone 2010, Slag 1200, Dolomite 340	4.2	3.6
C	Shale 14883, Sandstone 2415	2.82	1.95
D	Shale 180, Limestone 180	3.85	
E	Clay, Shale, Limestone		2.8
F	Limestone, Shale, Silica	3.67	
G	Lead, Slag	6.5	

The evaluation approach should be systematic, as shown at top of page where not only the analyses of the raw materials are given, but also the relative charges, with the evaluation reduced down to heat consumed per lb. of wool blown as well as recovered wool.

This particular cupola is operated with a fairly high limestone content in the charge, which means that a considerable amount of heat is abstracted in driving off the CO_2, so that the charge does not heat up to the melting point as readily. It means also that a large proportion of the charge is of high melting point, which would limit the rate of melting and so limit the capacity, as well as lower the fuel ratio.

Still results are considered good. A capacity of 35 tons of blown slag is obtained from a 56-in. cupola with the charge predominantly limestone and dolomite at a 4.2 ratio on the basis of material blown. But even though this may be considered good, it still is extremely wasteful as will be demonstrated further on. It also may be stated that the gas analysis data of Plant B refer to this particular cupola, and the data for Cupola No. 3, Plant A, are the following:

(See Part 2 of article—February, 1949, issue of ROCK PRODUCTS.*)*

HOURLY CHARGE AND CONVERSION TO SLAG AND CO_2

	Hourly Charge Lb.	Slag Conversion Multiplier	Slag Lb.	CO_2 Gas Multiplier	CO_2 from Carbonate and Carbon Combustion, Lb.
Rock	360	.7314	262	.219	79
Slag	1020	.9845	1070	—	—
Dolomite	89	.5343	47	.461	41
Coke	414	.08	33	.91 x 3.667	1383
Total	1943 lb.		1412 lb.		1503 lb.

Slag blown per hour (lb.)	1413
Approximate actual recovery (lb.)	1230
Percentage recovery	87
Percentage carbonate CO_2 of total CO_2	8
Coke ratio to slag charged	3.4-1
Coke ratio to wool recovered	3-1
Heat value of coke (B.t.u.)	13600
B.t.u. per lb. of slag blown	4000
B.t.u. per lb. of wool recovered	4530
Daily net capacity	14.7 tons

*Consulting Engineer, Azbe Corporation, St. Louis, Mo.

In this second cupola, far less limestone was used and more slag as indicated by the fact that carbonate CO_2 compared to total CO_2 was only 8 percent compared to the previous 21 percent. A higher efficiency should have been more readily possible, but actually efficiency was lower. If this cupola would have been operated with the charge in the previous example, results would have been still poorer in respect to capacity, as well as to fuel consumption.

There are several reasons for the poorer results.

1.) The lower the capacity at which the cupola is operated, the lower the efficiency will be. Jacket loss, which is almost inversely proportional to capacity, has a great bearing on final efficiency.

2.) The lower the capacity rate, the slower the upward flow of gases will be and the greater the CO_2 conversion to CO, and consequently the carbon loss.

3.) The cooler the coke is, the lower its loss as CO will be. In the previous more efficient case, coke was charged mixed, keeping it cooler than when it was charged in layers.

The reason why one cupola had a lower capacity than the other and broad field is opened for work toward more efficiency, better quality and increased capacity.

A cupola is charged with a certain amount of coke and a certain amount of stone, and blown with a given amount of air. The amount of heat developed is quite definitely known. By taking measurements of temperature and the amount of water circulated, and the temperature and analysis of gases escaping, a rather close heat balance can be arrived at.

Such a balance may not be absolutely correct because the heat generated in the formation of silicates, aluminates and ferrates is not definitely known; neither is the radiation loss and a few other such losses known. A scientific balance would determine these also, but an approximate balance serves almost as well and is more likely to be worked out by the average plant operator.

Following are two such heat balances in which, due to crude field testing conditions, some items may be somewhat out of line. Still, since those items of greatest loss are so large and most readily determined accurately, no change in the lesser items, or any additional items, would change the picture of extreme waste.

PLANT B HEAT BALANCE

Heat Generated	
Heat in Coke .92 × 14540 × 690 = 9,230,000	100.00
Heat of formation of silicates, etc.	5.00
Total	105.00
Heat Lost	
Incomplete combustion 30 percent air deficiency	42.00
Jacket water 55500 lb. × 29 degrees F. = 1,609,500	17.5
Heat of slag 2880 × 900 = 2,590,000	28.1
Loss due to dissociation of $CaCO_3$ and $MgCO_3$, 852,000	9.2
Heat of escaping gases	3.4
Radiation and unaccounted	4.8
Total	105.0

factors regulating cupola capacity will be considered later. We merely mean to show that there should be a basis for comparison, and that the best basis would likely be net capacity in tons per day and heat consumption per lb. of recovered wool, considered together with the nature of the charged material.

Heat Balance

No matter what heat apparatus is used, whether a boiler or a blast furnace, a lime kiln or an open hearth, a heat balance is necessary. The less that equipment is developed, the more important such a balance is. Unless such balance is known, improvement is difficult. This is comparable to the difficulty of improving business operations if the books are not balanced in detail.

A cupola that is essentially a lime kiln gives a very poor lime ratio of 1-1, where the lime kiln most likely will give a ratio of 5-1. Why should there be such a difference? By finding the answer, even though it might not be absolutely exact, an immensely

This cupola gave good results as cupolas go. The top of the charge was cool due to frequent charging, so that one would never have imagined that 42 percent of the heat in the coke passed off as CO.

The heat of the slag, or 28 percent, could be used as the efficiency factor. Many cupolas operate with an efficiency of only 15 percent.

The low water jacket loss of only 17.5 percent increased the efficiency of this particular cupola, and was due to the high capacity rate. Jacket loss on some cupolas of low capacity can be as high as 45 percent. That of the cupola with the following heat balance is 40 percent.

Heat Generated	
Heat in coke	100.00
Heat of formation	5.00
Total heat input	105.00
Heat Lost	
Incomplete combustion loss	36.00
Jacket water loss	40.00
Dissociation of limestone	10.00
Heat of escaping gases	5.8
Heat of the slag	10.5
Radiation and unaccounted	2.7
Total	105.00

In this example, the incomplete combustion loss is less, but only because the jacket loss is so much greater. Efficiency is extremely poor—only 10.5 percent.

With such information, one is able to plan, and reduce excessive jacket loss and minimize incomplete unduly high, combustion loss. Every step taken can then improve the cupola efficiency, and raise the heat content of the slag blown which is the slightly imperfect but still entirely usable criterion of cupola efficiency.

Reports on Ballast, Liassic Rock Alterations

TRANSLATIONS of two French reports dealing with geologic data of particular interest to the rock products producer have recently been made available by the United States Department of the Interior. "Choice of Materials Most Suitable for Ballast," by Leo Maddalena, is a five-page report describing properties required in a good ballast material. "Present railroad traffic conditions, with heavier trains and greater speeds, require ballast to be made of sharp-edged rock fragments instead of rounded gravel. It is evident that for macadam roads, a compact mosaic or real concrete is required; whereas, railroad ballast must not acquire with time any cohesion which would prevent the greatest permeability to rain waters." The report continues by considering important rocks of Italy as well as general rock types such as granite, syenite, lavas, sandstones and limestones, with respect to their structure, texture, compaction, accessory elements, porosity, alteration and strength.

"Special Problem Caused by the Epigenetic Alterations of Liassic Rocks," by Joly, Henry and Ninck, describes damage to foundations of a building in Nancy, France, that was due to swelling of a Jurassic shale bed. Swelling was due to the formation of calcium sulphate by chemical reaction of constituents of the shale resulting from circulation of damp air in the bed. Upon investigation it was found that the air was circulating in an area that had been drained of all water. An effective means of combating this heaving in the shale bed was accomplished by sealing the drains and forcing a liquid concrete down into the interstices of the bed.

A limited number of these reports have been mimeographed, and as long as the supply lasts, copies may be obtained by writing the Director, U. S. Geological Survey, Washington 25, D. C.

Buys Rock Quarry

FLOYD BAILEY has purchased the Ruth Dixon rock quarry and equipment near Kirksville, Mo.

Agricultural Limestone Convention

National Agricultural Limestone Association considers markets for 1949

Caught in an informal pose, left to right, are: R. M. Messick and J. S. Dyott, M. D. Service & Supply Co., Easton, Md.; Edward Clark, Munnsville Limestone Corp., Munnsville, N. Y.; and B. T. Scharbach, Sand & Stone, Inc., Essexville, Mich.

NATIONAL AGRICULTURAL LIMESTONE ASSOCIATION held its fourth annual meeting at the Hotel Statler, Washington, D. C., January 18-20 inclusive, the dates coinciding with the inauguration week of President Harry Truman. Two speakers of political prominence took part in the program: Charles F. Brannan, new Secretary of Agriculture, and Maurice J. Tobin, Secretary of Labor.

N.A.L.A. President H. G. Gray presided at the first morning session which was confined mainly to association business of a routine nature. L. S. Fry presented the committee report on membership. During the past year, the membership in the association has grown from 283 to 355, there being at the start of this year 205 active members, 141 associate members (truckers), and 9 associate manufacturer members. C. P. Haun presented a brief report of the percentage depletion committee, and J. M. Deely, legislative committee, gave a short review of the association's work, bringing out that heaviest agricultural liming, formerly in the northeastern states, is now shifting towards the southwest. N. G. Farber presented a report on finances.

The remainder of the morning discussion was devoted to a sound method of assessing dues. It was recommended and adopted that $75 be the annual dues for older members and that $25 be the dues for new members for the first year. The intent here is to encourage new membership especially among the smaller agricultural limestone producers. Rollie Schneckloth, Lowden Rock Products Co., Lowden, Iowa, said there were possibly 400 of these small agstone producers in his state alone. In addition to the dues, and for the older members, it was recommended that "sustaining" dues be assessed. The sustaining dues were divided into eight classifications as follows:

Classification	Amount
A	$1000 and up
B	600 to $1000
C	500
D	400
E	300
F	200
G	100
H	Less than $100

Members are not obligated to put themselves in any classification after payment of the $75, and each member may select his own classification.

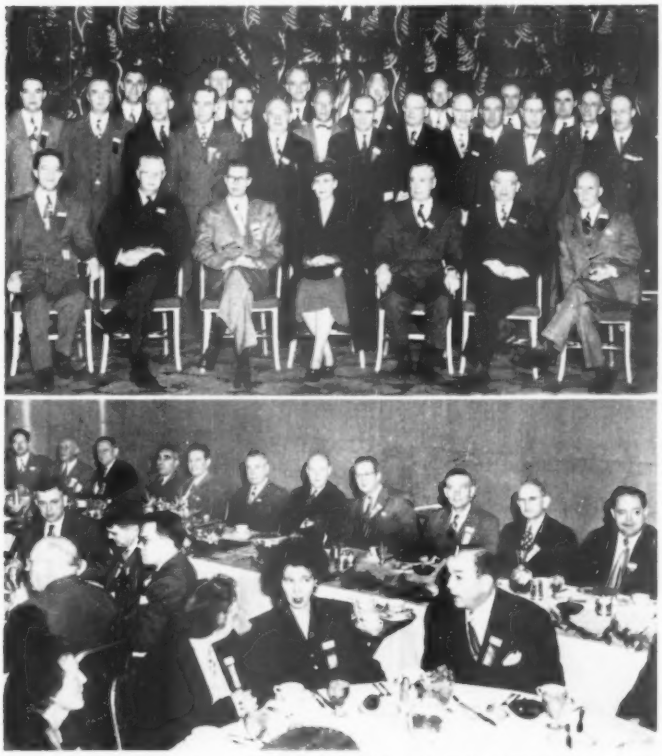
Secretary of Agriculture Brannan spoke at the noon luncheon on the first day. He invited criticism of his department and stressed the point that agricultural resources would be maintained and that liming and liming research would be used to expand the industry.

The afternoon session, under the chairmanship of Vincent H. Shea, featured Ralph S. Trigg, Administrator of P. & M. A., as first speaker. He talked on "The Production & Marketing Administration and the Agricultural Conservation Program," stating that soil conservation, especially liming, was vital. He used China's great agricultural depletion as an example of what happens when conservation isn't practiced. In the United States, during the last 8 years, the population has increased 12 percent, to 148,000,000, and with 365,000,000 acres of agricultural land to feed them. During this same period farm production has gone up 35-40 percent. The 1948 crop was the largest on record, yet there was no great expansion in acreage. Mr. Shea pointed out that the population of the United

Left to right in picture, left, of annual banquet: Mr. and Mrs. R. J. Pleasant, Anchor Stone & Materials Co., Tulsa, Okla.; Mrs. H. C. Gray, Tulsa, Okla.; Mrs. R. M. Koch, Washington, D. C.; Mrs. A. R. Armbrust, Washington C. H., Ohio; Rep. Cliff Clevenger of Ohio; Roy J. Jordee, P. & M.A.; A. R. Armbrust, Fayette Limestone Co., Washington C. H., Ohio, and Dr. C. W. Whittaker, Bureau of Plant Industry, U. S. D. A. Left to right in picture of speakers table at the annual banquet: Rep. Clarence Cannon of Missouri; President H. C. Gray, Standard Paving Co., Tulsa, Okla.; Maurice J. Tobin, Secretary of Labor; Vice-President J. M. Deely, Lee Lime Corp., Lee, Mass.; C. P. Haun, Franklin Limestone Co., Nashville, Tenn., and Senator Edward J. Thye of Minnesota

States in 1960 would be in the 160-170,000,000 range.

A. V. McCormack, Director of the A.C.P. Branch, talked on "The 1949 and 1950 National Agricultural Conservation Programs." The 1949 program calls for an expenditure of $262,500,000, with the net slightly lower than last year's $225,000,000. He outlined the basic concepts of soil conservation, including erosion and fertility, in regard to lime, phosphorus, potassium, etc. Mr. McCormack also mentioned restoration, water uses (irrigation), removal of excess waters from some areas, and forest conservation as public benefits. He estimated that in 1947 some 30,000,000 tons of limestone were used and that in 1948 the amount used would be around 21,000,000 tons. The year 1949 would possibly use up 30,000,000 tons. Some 60,000,000 tons per year are needed to keep the nation's soil in first class condition. He distributed tabulated data showing the liming materials furnished under the agricultural conservation program for 1947 and for most of 1948.



In the top picture are directors and officers of the National Agricultural Limestone Association, Inc., who were present at the time the picture was taken. Seated, left to right, they are: Robert M. Koch, executive secretary, Washington, D. C.; K. C. Rankin, Rockland-Rockport Lime Co., Rockland, Maine; B. T. Scharbach, Sand & Stone, Inc., Essexville, Mich.; Mrs. Stanley D. Pace, Monroe-Cumberland Crushed Stone Co., Burkesville, Ky.; President H. C. Gray, Standard Paving Co., Tulsa, Okla.; C. A. Munz, Eastern Rock Products, Inc., Utica, N. Y., and E. M. Prettyman, Annville Stone Co., Conshohocken, Pa. Directors, standing, left to right, are: R. M. Patton, Plum Run Stone Division, Columbus, Ohio; J. W. Gardner, Dayton Coal & Iron Co., Dayton, Tenn.; N. G. Farber, Farber White Limestone Co., Franklin, N. J.; L. W. Preston, Gassaway Construction Co., Glasgow, Ky.; W. J. Clark, Munnsville Limestone Corp., Munnsville, N. Y.; Robert H. Schneckloth, Lowden Rock Products Co., Lowden, Iowa; L. W. Hayes, L. W. Hayes, Inc., Kansas City, Mo.; M. J. Wurtenberger, Frontier Stone Products Corp., Lockport, N. Y.; Earl Heckathorn, Stuntz-Yeoman Co., Delphi, Ind.; C. P. Haun, Franklin Limestone Co., Nashville, Tenn.; C. W. Duff, Avon Bend Lime Marl, Charles Town, W. Va.; W. E. Horne, Limestone Products Corp. of America, Newton, N. J.; R. J. Pleasant, Anchor Stone & Materials Co., Tulsa, Okla.; Arthur Alvis, Butler, Mo.; J. B. Mount, Maymead Lime Co., Shouns, Tenn.; W. Ray Clark, Everett & Clark, Plattsburg, Mo.; A. R. Armbrust, Fayette Limestone Co., Washington C. H., Ohio; Charles Rich, Swanton Lime Works, Inc., Swanton, Vt.; J. V. Clisham, The Arundel Corp., Baltimore, Md.; W. E. Buratt, Farmers Cooperative Ass'n., Frederick, Md.; and T. C. Pollack, Vermont Associated Lime Ind., Burlington, Vt. Left to right, bottom picture, at the speaker's table for the greeting luncheon, are: Mr. Koch, executive secretary; E. M. Prettyman, Annville Stone Co., Conshohocken, Pa.; A. J. Loveland, Under Secretary, U.S.D.A.; Vincent Shea, Allied Minerals, Inc., West Chelmsford, Mass.; Ralph Trigg, Administrator, P. & M.A.; President H. C. Gray; Charles F. Brannan, Secretary, U.S.D.A.; Vice-President J. M. Deely, Lee Lime Corp., Lee, Mass.; A. V. McCormack, Director, A.C.P. Branch, P. & M.A.; J. B. Mount, Maymead Lime Co., Shouns, Tenn.; Roland Crumpler, Chief, Conservation Materials & Services Section, P. & M.A.

Trends in Use of Agstone

Roland Crumpler, Chief of the Conservation Materials and Service Section, spoke on "Trends in Purchasing Liming Materials Under A.C.P." He pointed out that there were three ways for the farmer to buy. Under the first system, county committees and farmers would meet first and the farmer could elect to pay cash and get a refund from the government later—a lengthy process. The second system, a quicker method, is the contract purchase system. Here the farmer would leave his order with the committee and pay his portion. Under the third system, Purchase Order Plan, the farmer would give an order to a producer or dealer. The dealer in turn, would pay for the material and render a bill to the government. Orders would be given through local committees. Under this system competitive conditions are more easily maintained, the speaker pointed out.

A reception for members and guests was held at the evening session on the first day. H. C. Gray presided with N.A.L.A. vice president J. M. Deely acting as toastmaster. Secretary of Labor Tobin spoke on "Labor Relations—Industry, Management and the Public."

Dr. William A. Albrecht, Chairman of the Department of Soils, University of Missouri, using slides gave an informative and interesting talk on "Declining Soil Fertility, Its National and International Implications." Dr. Albrecht is an international authority on soil fertility and its relation to mankind. He pointed out that soils erode because they are poor and have been robbed of their mineral content. Once this mineral content is gone, the soil becomes biologically impotent and a physical change takes place that lends itself to erosion. A good soil does not erode, he stressed. He brought out that cattle or live stock have the inborn capacity or ability to select feeds that were grown on good soils, and illustrated this by the observation that cattle, pastured on poor or near-poor pasturage, will stick their heads through a wire fence to get the grasses outside the pasture, because there, repeated robbing of the soil of its annual crop has permitted nourishing grasses to grow. He brought out that due to the annual robbing of the soil of its mineral content, while agricultural products could have a large bulk with the yield per acre very high, the nourishing value of that crop could be practically nil. On the following day, a motion picture made under the sponsorship of Dr. Albrecht, amplified very forcibly, that soils, even if they do grow a bulky crop, may be practically useless as a food. Dr. Albrecht suggested that ag-stone producers think about adding either phosphate bearing minerals to their

(Continued on page 117)

Pennsylvania Stone Producers Association Annual Meeting

THE PENNSYLVANIA STONE PRODUCERS ASSOCIATION held its annual meeting on January 19-20, 1949, in the Hotel Penn-Harris, Harrisburg, Penn., where it was host to the aggregate, construction and other allied industries for the third successive year. Over 400 members and guests were in attendance.

Ray F. Smock, secretary, Pennsylvania Department of Highways, welcomed those present, after which C. H. Buckius, assistant chief engineer, Department of Highways, presented the 1949 materials requirements for highway construction, reconstruction and maintenance purposes. Approximately 4,000,000 tons of coarse aggregate will be required in 1949 as compared with 8,000,000 tons in 1948. He explained that the reduction in tonnage is being caused by the lack of highway funds which could be used for new construction. Mr. Buckius explained that Pennsylvania had exceeded any other state in the United States in new highway construction during 1948, and that in order to maintain the pace which they had set, and to meet the requirements of increased truck and passenger car traffic, additional revenue must be provided for the Department of Highways' use. An analysis of conditions revealed that an additional 2c per gal. gas tax would be required to meet this need.

Before the close of the meeting, the group unanimously approved and asked that each individual actively support this increase in the gas tax levy which will come before the 1949 session of the Pennsylvania Legislature.

Discuss Wage and Hour Law

William Hargadine, Assistant Regional Director of the Wage & Hour & Public Contracts Division, U. S. Department of Labor, discussed the new interpretations of the Wage and Hour law. Mr. Hargadine particularly emphasized the Longshoremen's decision which, in some cases, entitles the employee to time and one-half payment when it appears that the employee is already receiving overtime compensation. The confusion in the interpretation by employers and employees was brought about by the fact that premium payments for undesirable work days, Sundays and holidays, as well as for engaging in dangerous or hazardous work, is sometimes misconstrued as being overtime payment. However, such is not the case, and this premium payment must be reckoned with when more than forty hours are worked in one week.

The afternoon session was opened by I. H. Boggs, Bituminous Concrete Engineer, The General Crushed Stone Co., Easton, Penn., who discussed, "Development and Use of Stockpile Bituminous Concrete Material for Patching Highways." He explained that this is a comparatively new product in Pennsylvania and traced its slow but steady development and use since 1944, when slightly more than 100 tons were used, until 1948 when more than 6000 tons were used. Any producer of plant-mix bituminous concrete can produce this material by following a set of specifications which may be had by contracting The General Crushed Stone Co., he stated. Being able to stockpile this ready-mix patch material along the highway right-of-way greatly facilitates maintenance for the Highway Department's maintenance crew. The material also is valuable for laying sidewalks, at railway crossings, and for driveway work. It can be prepared by the plant mix operator when other work has slowed down.

Base Course Specifications

J. E. Gray, Field Engineer, National Crushed Stone Association, gave a detailed talk on specifications for "The Insulation Base Course Under Portland Cement Concrete Pavement." Mr. Gray emphasized the need for having this base course free draining, yet having the particle gradation fine enough so that it will seal out the subsoil when it becomes saturated with water.

George A. Rahn, Materials Engineer, Pennsylvania Turnpike Commission, discussed the requirements for the Eastern extension of the Pennsylvania Turnpike, beginning at Middlesex, Cumberland County, Penn., and extending to King of Prussia in Montgomery County, Penn. The total coarse aggregate requirements for the wearing surface will be 1,000,000 tons, with about 50 percent being required in 1949, and the other 50 percent in 1950. In addition, an insulation base course, 6 in. in thickness, the full length of the Turnpike, also will be needed. With but few and minor exceptions, the material specifications for the Turnpike will be very similar to those which the Pennsylvania Department of Highways is now using.

The Pennsylvania School Tax Law, enacted by the 1947 session of the Pennsylvania Legislature, formally known as Act. No. 481, was discussed by Dr. Harold Alderfer of the Pennsylvania Department of Internal Affairs. Dr. Alderfer analyzed the workings of this School Tax Law which permits each School Board to levy a tax for their school needs on anything not already being taxed by the State, Federal Government or Municipalities for school purposes. Dr. Alderfer suggested that certain changes and amendments may be made to this Act, but that he did not believe that the present Legislature, which is now in session, would abolish the Law, as this Act was designed to strengthen 'home rule,' and that the present Governor, James Duff, was strongly in favor of such action. However, Dr. Alderfer did say that he believed that inasmuch as this Act could be confiscatory, taxing certain companies while others went tax free, it might put them in such an unfavorable competitive situation as to force them out of business. He believed that the Legislature should, and probably would, limit the amount and degree of taxation which would be placed on any individual company. This is particularly true in the natural resource industries, which includes limestone, sand, gravel, coal and the like.

T. C. McPoyle

Election of Officers

On the second day, the Association held a general business session at which time the following officers and board of directors were unanimously elected to serve for the year 1949:

President, T. C. McPoyle, The John T. Dyer Co., Birdsboro; vice president, Paul I. Detwiler, New Enterprise Stone & Lime Co., New Enterprise; secretary, W. H. Fehr, Berks Products Co., Reading; treasurer, H. M. Binkley, Binkley Bros. & Ober, Lancaster; and directors, J. P. Peacock, Bethlehem, and J. C. Showalter, Blue Ball, in the Eastern section; W. E. Wilson, Harrisburg, and F. I. Narehood, Milton, in the Central section; and K. O. Brown, New Castle, and Paul Walker, Chambersburg, in the Western section.

H. H. Wagner, Harrisburg, Penn., was reelected as general manager for the 14th consecutive term. The following were elected on the executive committee for the year 1949: K. O. Brown, western section; H. M. Binkley, central section; and president T. C. McPoyle, eastern section, as ex-officio member.

Motor Armature Maintenance

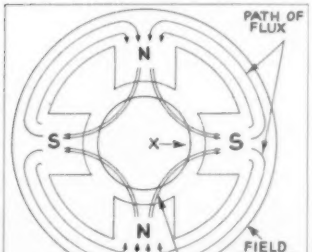
Suggestions for care in handling and operation of armatures to reduce and minimize breakdowns

By PAUL ZIEMKE

SINCE THE ARMATURE is by far the most vulnerable part of a direct current motor, it should merit serious consideration in the matter of costs in motor maintenance. Many armatures are damaged by worn bearings that permit core laminations to rub on pole pieces. Also, gouging out of metal often occurs as the result of heavy arcing when short circuits to ground or adjacent coil members take place. Many times armature cores are abused through improper transportation facilities. Frequently the core is treated as if it were a steel billet and is thus rolled from place to place with practically no consideration given to the delicate edges of the stacked laminations.

Armature Construction

Laminated cores are not solid iron blocks in which slots have been cut to introduce armature coils; they actually are stacks of thin, soft iron discs insulated from each other by suitable enamels and then securely pressed together. It is essential that the exposed edges be treated with due caution. These laminations, designed to carry magnetic flux at high values, like those used in alternating current transformers, are easily bent and distorted. In the transformer there is no electrical connection between the primary and the secondary windings, yet power is produced through the medium of the magnetic flux that alternates in unison with that of the alternating current generator. With secondary current alternating as that of the primary, the instantaneous values are: $e = N \frac{d}{dt}$ volts. Let us consider the iron in a rotating armature where N is the number of secondary turns of wire and $\frac{d}{dt}$ is the rate of change of magnetic flux in webers per second, the weber being the unit of magnetic flux equivalent to 10^8 flux lines or maxwells.



Magnetic field circuit of a direct current motor

In Fig. 1 we illustrate a section of one lamination in the core. Any change of flux through any part of the iron core causes the iron which surrounds the flux to become equivalent to the turns of wire on the secondary side of the transformer and is indicated by the symbol I for the electrical path. It so happens that this path is short circuited and the current flows around it. Consequently the iron is a conductor for many currents that flow around within itself, best known as eddy currents. The iron having resistance to current, I^2r losses are incurred which appear in the form of heat. This heat is distributed throughout the motor and is retarded from becoming excessive by the presence of insulation between each layer of lamination. Otherwise a condition would develop between layers which could cause serious overheating. The variables that occur in the production of eddy currents and the resulting heating effect are indicated as: $P = \frac{\pi^2}{6r} \times V \times t^2 \times f^2 \times B$. P = heat indicated in watts, R = resistivity in cubic meters, t = thickness of laminations in meters, f = frequency of flux variation, and B = the maximum flux density per square meter in webers. Heat varies directly as the square of the frequency of the flux variation and inversely as the resistivity of the iron. These factors are not neglected by the motor design engineers since in the competition of the trade both weight and size must be kept at a minimum with the result that the motor operates very close to allowable maximum temperature when drawing full load.

Motor Repair Shops

Poor workmanship in motor repair shops is directly responsible for much unnecessary expense in plant operation since the jobs turned out do not stand up under the work expected of them in an average plant. Ripping out old armature coils by force, fire or mechanical means may appear to save costs in time, yet these methods prove very destructive to the carefully designed and assembled laminations forming the core. Any distortion of the soft metal extremities through

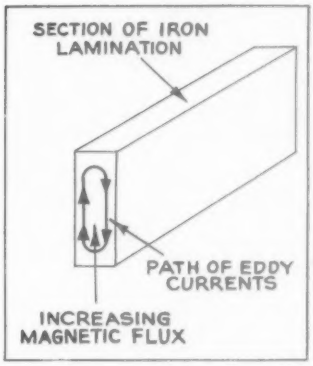


Fig. 1—Section of lamination in armature core

burring, gouging or denting will cause the insulation between layers to fail and thus permit layer to touch layer, thereby causing a short circuit in the "iron" with the resulting increase of eddy current flow and subsequent heating. Where the effective thickness of an uninsulated lamination for one section of the armature core is doubled, the eddy current heat released is quadrupled since heating varies as the square of the thickness. Where the thickness is tripled, heat is increased fully nine times over that expected by the design engineer.

Any damaged spot on the periphery of armature laminations where the iron short circuit exists through careless maintenance while the motor is in operation, such as the welding that occurs due to grounding or to adjoining armature coils shorting turn to turn, is particularly bad. Heavy rubbing of armature laminations on those of the lower field coils when bearings are allowed to wear excessively is also a sign of poor maintenance. Such hot spots will cause rapid deterioration of the coil insulation in immediate contact with them and burn-outs soon follow.

About the only recommended repair for a damaged core is to unstack it, beat out the bent and distorted edges carefully, and then recoat each lamination with an approved varnish. Careful restacking and compressing under great pressure then follows with such locking-in, as is required by the motor design.

A recent tour of several representative motor shops would indicate that in all too many instances the shop mechanics have but a hazy concept of the importance of acceptable core maintenance. Many of the locomotive armature cores, as well as those from pump and ventilating motors, were found to be all but ruined by the damage to the tooth tips at the slot ends which prevented the proper entry and fit of the slot sticks. In some instances the mechanics attempted to file out these slots which of course only aggravated the situation. In other

(Continued on page 124)

Crushed Stone

(Continued from page 98)

whereas up to 10-15 percent minus 100-mesh material and considerable minus 200-mesh fines have been allowed, that is not desired now because allowance must be made for degradation in the mixer. He further commented that the Corps of Engineers is ready to pay for durable aggregates and said that alternate specifications have recently been written, one for natural aggregate and another for manufactured aggregates, for a particular project.

Legislative Trends

An analytical forecast of the legislative outlook was presented at the afternoon session on February 8 by James W. Douthat, executive assistant, National Association of Manufacturers, Washington, D. C. The title of Mr. Douthat's paper was "Significance of Recent National Elections—A Washington Preview of What Lies Ahead."

There wasn't much optimism in Mr. Douthat's report unless it be that Congress will be slow in acting on the administration's proposals. He started by mentioning that there is a worldwide trend to concentration of more power in government and that the United States has a trend in that direction, despite the fact that political freedom and free enterprise built the nation. The democratic party now in power, of course, believes in the expansion of government's power. The fact that the party has won five consecutive elections, he said, shows that the people want a strong central government. The future will determine whether that is to be permanent.

He said that Truman's "Fair Deal for All" means a labor bill that would bow to the demands of labor and provide no protection for industry, the public and business. His labor bill, called the "False Teeth Bill" because it has no real teeth, is more pro-labor even than the Wagner Act. As to the outcome, he said that Senator Taft estimates that two-thirds of the Taft-Hartley Act would be saved. The administration would permit unions to featherbed, deprive management of free speech, permit mass picketing and could lead to dictatorship.

He said that amendments proposed to the Wage-Hour Act would cover practically all businesses if passed, to the point where even a man engaged in cutting grass around a factory could be ruled as engaged in interstate commerce. Interpretation would be up to the Secretary of Labor which would be equivalent to writing the law as cases came up.

Mr. Douthat itemized the tremendous costs and the taxes required to finance Truman's spending program. The cost would be $15 billion superimposed on the $41 billion budget for the next year. The social security program would cost 20 percent of the total payroll or ten times what it costs now for the future. Already, he said, 20 percent of national income goes for federal taxes plus 5 percent for state taxes. President Truman expects industry to pay the cost of his spending program while he subjects it to more controls. If granted the power to allocate materials scarce in supply, he would have the power to decide who may stay in business.

Special Uses for Crushed Stone

Whereas approximately 87 percent of crushed stone is used for concrete and road metal (52 percent), railroad ballast (8 percent), agricultural limestone (11 percent) and furnace stone (16 percent), miscellaneous uses involving relatively low tonnage are recognized as being profitable and the purpose of a paper, "Special Uses for Crushed Stone," by engineering director A. T. Goldbeck, was to point out some of the markets. Mr. Goldbeck's paper touched upon a myriad of uses for products, many of which can be produced from "waste" materials, and the specification requirements. These special products, which incidentally are enumerated in the annual Minerals Yearbooks published by the U. S. Bureau of Mines, bring relatively high prices.

Some of those mentioned where asphalt and fertilizer fillers, filter bed materials, whiting (for leather, paint, plastics, tooth paste manufacture, etc.), poultry grits, stucco materials, artificial stone materials, etc., many of which are expensive to produce and demand good prices. Some require fine grinding, chemical limitations and special gradings.

Asphalt fillers require finenesses of 80 percent minus 200 mesh. Fertilizer fillers are usually calcareous and in the No. 8—No. 20 sieve sizes. Mine dusts must not have more than 5 percent combustibles, must not contain more than 5 percent silica and be of a fineness of 100 percent minus No. 20 with 50 percent passing 200 mesh.

According to Mr. Goldbeck, for mineral feeds pulverized limestone is an ideal carrier and makes up 3 to 5 lb. per 100 lb. of total materials. Stone for trickling filter beds totalled 34,000 tons in 1947 and the annual tonnage is on the way up. The two sizes specified are 3½ x 2½ in. and 3 x 1½ in., requiring careful gradation and close limitations on fines. Manufactured stone sand has good possibility said Mr. Goldbeck and he incidentally pointed to preference for that product as recently specified by the Corp of Engineers for some projects.

In commenting on rock wool manufacture, he said that if a dry sample of stone loses 20 to 30 percent on ignition, that stone is suited for wool manufacture without other materials added. He touched upon poultry grit specifications and the close sizing required for the various products, he mentioned the use of fine stone products for concrete block manufacture, terrazzo, stucco and for heavy-duty concrete floors, concrete vaults and slabs as possible outlets for stone products.

Railroad Ballast

In a paper, "Problems in Railroad Roadbed and Ballast Maintenance," H. W. Legro, chairman of Committee I on roadway and ballast of the American Railway Engineering Association, of the Boston and Maine Railroad, Boston, Mass., summarized some of the new practices in ballasting and trends in railroad transportation, including higher speeds, which necessitate the building and maintenance of good roadbeds.

Mr. Legro said that the railroad plant is never finished and that there continues to be a race on between the railroad engineers responsible for roadbeds and the equipment engineers. The development of roller bearings, tight couplers, spring suspension, etc. in moving equipment, the use of light metals, block signals, more Diesel engines, all contributing to more comfort and faster service are demanding improved tracks structure. Heavier trains are also a factor. Proper support of the subgrade constitutes one of the most important problems. Mr. Legro mentioned that engineering director A. T. Goldbeck of the N.C.S.A. has three important reports on the subject of specifications and new developments pertaining to ballast that will be presented before the A.R.E.A.

The railroads are experimenting with the placement of "ceilings" over ballast to keep out engine sand, water, etc. mainly in and around stations. The process consists of placing an asphaltic topping over the ballast.

Support given by ballast and subgrade, according to Mr. Legro, should equal that required for bridges, and actual equipment has been devised to test supporting values. It is known that the loads are not distributed equally under the ties but that they are greater under and outside the rails. Also, the loads as they are applied off and on rapidly have bearing in the required depth of ballast necessary to spread the loads uniformly to the subgrade.

Mr. Legro re-emphasized that the trend in ballast is to the use of smaller sizes of stone and to the inclusion of more fines. The idea is to obtain more points of contact between particles to minimize crushing effects.

He commented upon the variations in the stability of various subgrades and the problems that follow. Granular soils are considered good, but deformable soils which change in volume with changes in moisture and consequently flow present serious problems. The first rule of constructing roadbeds is to provide for drainage. Tamping is an important development in the placing of roadways but it is often impossible to tamp subgrades where needed.

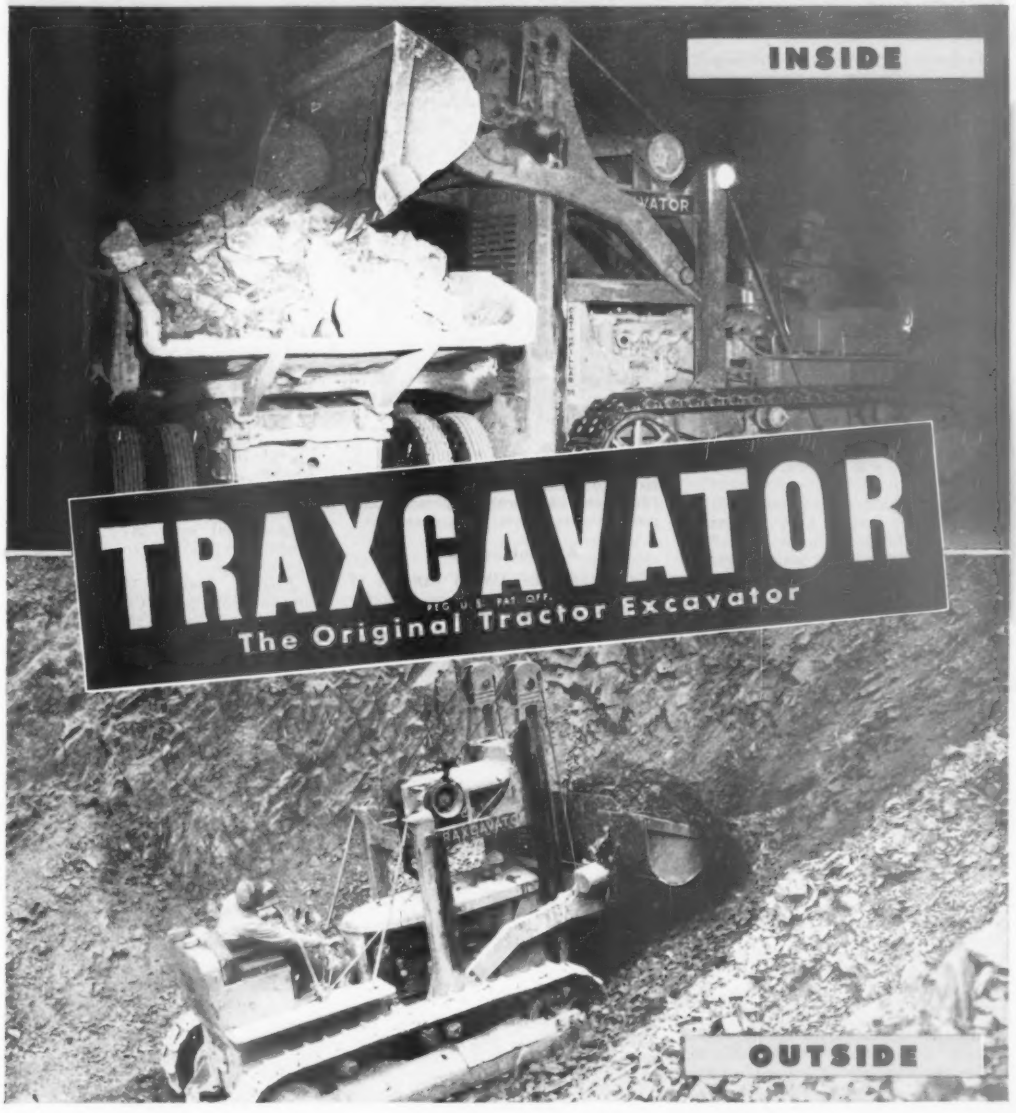
The causes of pumping were de-

(Continued on page 112)

TWO-TIMING SWEETHEARTS OF THE MINES

Inside and outside — in pits, mines and quarries, TRAXCAVATORS are "sweethearts" to mine operators around the world. "Sweethearts" because they're steady, dependable and always on the job performing. Whether they're stripping overburden, loading trucks or stockpiling — TRAXCAVATORS' cost-cutting, time-saving action increases the output and saves manpower wherever they're used.

ONLY TRAXCAVATORS are available in 4 sizes —with capacities ranging from ¾ to 2-½ cubic yards. TRAXCAVATORS ARE BIG WORKERS IN EVERY MINING OPERATION — from the smallest to the largest, they are rugged diggers, fast loaders and smooth operators. See your TRACKSON-"Caterpillar" dealer today or write direct to TRACKSON COMPANY, Dept. RP-39 Milwaukee 1, Wisconsin.



Crushed Stone

(Continued from page 110)

scribed as was the practice of pressure grouting and means of application. Grouting at unstable locations in roadbeds has proved very economical and profitable and has eliminated many costly hours of hand labor. Some grout fills (cement, water and sand) up to 100 ft. in height have been made. The slurry is forced, hydraulically or pneumatically, through hose driven through the ballast into the subgrade. Grouting is not considered a cure-all for instability, however, since some soils do not respond. Heavier rainfalls of the last nine years have complicated the problem of maintaining stable roadbeds.

Federal Regulation of Pricing

"Federal Regulation of Pricing Methods and Policies" was the subject of Neal C. Head, member of a prominent law firm in New York City that has taken active part in hearings on basing point pricing. Mr. Head substituted for John C. Gall who was unable to be present, and gave what we would term a clear presentation of the confusion and uncertainty that actually exists in industry and in the Federal Trade Commission and the courts as the result of the basing point decisions which forbid uniform delivered prices for standardized commodities where freight is an important part of total price. Only the Supreme Court and Congress can eliminate the confusion, he said, and set definite rules whereby industry will know what it can do in establishing pricing methods that will not be considered illegal.

The way matters now stand, if a manufacturer invades another's market or cuts his price below that of a close manufacturer, he could be ruled as being in violation of the Robinson-Patman Act and be subject to treble damages; if he just meets a competitor's price he could be charged with conspiracy to fix prices. On the other hand a higher price could be quoted which would mean losing the business so, as he pointed out, industry is in a dilemma. The real attack, he said, is on uniform prices for commodities and the F.T.C. frowns upon freight absorption as a regular practice as being a means to effect uniform prices.

The F.T.C. has said that buyers can no longer be denied the advantages of closeness to point of manufacture of goods but, as Mr. Head pointed out, with a single plant monopoly system which the outlawing of basing point pricing would necessitate, the buyer would be the loser since service, quality and delivery factors would no longer be available to him because competition really has been eliminated. In concluding, he said that the Johnson Bill has been introduced which would permit absorption of freight if the seller can show that it is done to meet competition, and he mentioned that otherwise the railroads may be asked to absorb freight if the existing rulings hold.

New York's Idlewild Airport

Austin J. Tobin, executive director, Port of New York Authority, New York, N. Y., described the Idlewild Airport on Long Island which is still under construction. It is a tremendous project, occupying over 4000 acres and when completed, will have 12 runways some of which will be over two miles in length. These runways are of 12-in. reinforced concrete, 200 ft. in width and with 50-ft. wide aprons on each side. They are laid on crushed stone subbase and utilize tremendous quantities of aggregates, cement and concrete pipe for drainage.

It is a futuristic project and, in its design and in the design of hangars and buildings, provides for airplanes of the future that will be larger and heavier than any yet in service. There will be hotel facilities and a new expressway built to make the airport quickly available from downtown Manhattan. The project means tremendous markets for products of the rock products industries and serves to emphasize the potential for the industry in airport and runway construction, with necessary access roads, etc. Airports in many of our cities, like New York, are no longer adequate and have no provision for the heavy increase in airplane passenger and freight traffic that is destined to come.

The Idlewild project represents a $250 million investment but is a self-supporting endeavor under the jurisdiction of the Port of New York Authority, which is joint agency of New York State and New Jersey. It functions as a private corporation and raises capital from private sources.

Annual Banquet

As usual, the annual banquet of the National Crushed Stone Association, preceded by the traditional reception, was the top social event. President W. W. Weston, Jr. presided over the affair which featured a highly witty talk by Dr. John L. Davis, humorist and philosopher of New York City, on the subject "Foolosophy, Facts and Fun." The serious thinking in his talk amounted to putting over the idea that the United States has the best government in the world today.

Highway Construction

Wilson P. Foss III, president, New York Trap Rock Corp., presided over the concluding session. The first speaker was B. D. Tallamy, superintendent of public works, State of New York, Albany. He spoke on "The Highway Challenge—And You." He said that in the early days of the automobile there arose a popular demand for better and more highways and this insistent demand led to the construction of about 3,000,000 miles of highways in the United States. However, during the depression years, the war period, and even now, there is no popular demand to have highways brought up-to-date, and he thought that every means available should be used to arouse the public to what is going on because of the insufficiency of our present highway systems. He cited figures relating to highway costs. In commenting on the requirements for New York State, he said that it would require $143 million each year for the next 14 years to bring the highway system up to requirements and $80 million per year thereafter to keep the state's highway system in good, workable condition.

Short Time Delay Blasting

Dr. L. Don Leet, seismologist, Harvard University, Cambridge, Mass., was one of the panel discussion leaders in a session devoted to blasting. He spoke very briefly on "Vibrations from Short Delay Blasting," pointing out that that expression was only another name for split second delay blasting and he reviewed the progress made during the past year. Essentially this amounted to that it is best to detonate any series of holes starting from one end to the other and in sequence. He showed slides to illustrate his points. Too few holes, he said was worse than having a great number, and that five to seven holes fired in sequence, from end to end, was a minimum to fire in a shot to get good vibration results. He showed slides that gave the vibrations due to exploding 1,300,000 pounds of dynamite on a T.V.A. project in Tennessee. He had taken seismograph readings of the vibrations at 8000 ft. and 11,000 ft. from the point of detonation and the vibrations recorded showed that this blast, the largest shot ever fired (he said), produced vibrations too small to do any damage.

Jules E. Jenkins, Vibration Measurement Engineers, Chicago, Ill., was the next speaker on the panel and he talked on "Vibration Effect of Burden and Spacing With Short Delay Firing." He showed slides that told effectively the relation between increases in spacing and burden on displacements. The slides showed a regular drop in the displacement due to vibration, and these drops were indicated at all distances from which vibration measurements were taken.

Following Mr. Jenkin's brief talk, questions from the floor relating to blasting were considered. One quarry operator asked about the effect on vibrations due to drilling below quarry floor grade. Mr. Jenkins said that in firing holes drilled 2 ft. below grade there was no appreciable difference, but that in drilling more than 2 ft. below grade, differences have shown up. When holes were drilled 5 ft. below grade, vibrations "went to town." Often this is of no serious consequence to residents in the vicinity of the quarry, but it is of scientific interest.

Another producer asked if a greater

loading can be used when drilling is not below grade. He was advised to push out the bottom faster so as to push out the toe. When asked which was the best to use, delay caps or machine timers, both the speakers, experts on the subject, said they had no choice. Both methods are considered good, provided the sequences are the same. One exception, however, was mentioned and that related to shooting a particular type of silica and here the difference was slight, but in favor of the caps.

One operator asked if vibrations could be reduced by delay caps in series in the same hole (by decking the charge in the hole). Dr. Leet said that one operator, to his knowledge, did it, but that he had no definite data on the subject. Another operator said that decking gave him better fragmentation and fewer complaints. This operator said he shot four holes per blast as a rule, but that he soon was going to try a seven hole shot. His holes were 6-in. dia. and 70 to 84-ft. deep. The discussion brought out that the proper amount of powder to use (usually the ratios of 3 to 1) should remain constant and they advised tinkering with that ratio. When someone asked why there were more complaints from people living behind a shot, than from those in front of it, the speaker said it was possibly due to the fact that usually there are more people living behind the face. Mr. Jenkins said that the number of complaints about blasting should not always be used to judge the efficiency of a blast.

A representative of the Atlas Powder Co. asked about the progress being made in the development of data (and means of recording it) relating to air blasts and Dr. Leets said that equipment would be soon available to make measurements of air blast vibration both for pitch and amplitude.

Another producer asked regarding air blasts and their relation to cloudy days and he was advised that on cloudy days, air blast vibrations tend to follow the ground closer. Days in which high atmospheric pressure and no clouds are present are best for blasting where air blast complaints are a factor, one of the experts said.

"Highway U.S.A."

The second day's session started with showing of the highly interesting three-dimensional, full-color, sound film entitled "Highway U.S.A." that was made available through the courtesy of the Barber-Greene Co., Aurora, Ill. This was acclaimed with enthusiastic praise by the many who saw it for, with the sound film and its three dimensional aspects, the flat surface disappears and the illusion is created that you are actually looking as through a window. This same show was given last summer at the American Road Builders' show in Chicago and it was so interesting and successful that Barber-Greene Co. was invited to show it at this meeting. To see these three-dimensional pictures, the observer has to wear special, dark-colored, polaroid glasses. The set of several hundred pictures shows interesting and picturesque scenes all over America. To assemble this set of pictures, the company had to have not one, but several photographers, tour the United States from end to end and they secured pictures that are classics.

Another interesting sound picture showed the actual failure of the Tacoma bridge.

"Successful Living"

Guest speaker at the greeting luncheon, presided over by Harry E. Battin, Jr., was Dr. Norman Vincent Peale, Minister, Marble Collegiate Church, New York, N. Y. Dr. Peale gave an inspirational talk entitled "Successful Living" which was built around the theme that to live more happily one should relax more both in the physical and mental sense and in the spiritual as well. His talk was both philosophical and witty, in no sense "preachy," and his message was one that can well be taken to heart, and seriously, by many in the industry.

"World Government"

At the general luncheon on February 9, presided over by G. A. Austin, Cord Meyer, Jr., New York, N. Y., spoke on the subject "World Government." Mr. Meyer is a young World War II veteran who has taken world affairs to heart and his objective is world peace. He presented his subject matter in a forceful, serious and impressive manner. He believes that the nations of the world must join in forming a world federation to avoid certain destruction from another war due to the use of atomic and bacterial weapons. He urged that UN be bolstered with an effective policing force that would be more powerful than any member nation.

Manufacturers' Division Business Meeting

CHAIRMAN COTTRELL FARRELL presided over the annual business meeting of the Manufacturers' Division at a luncheon session on February 8. The meeting was unusually well attended. Plans for the machinery exposition to be held at the Stevens hotel in Chicago at the 1950 conventions of the National Crushed Stone Association, National Sand and Gravel Association and National Ready Mixed Concrete Association have been the chief activity of the Division. A committee has been appointed to lay plans for the 1952 exposition and will report its suggestions later to the N.C.S.A. Mr. Farrell expressed his appreciation for the cooperation and help given during the past year by N.C.S.A. by president W. S. Weston, Jr., Otho M. Graves, J R. Boyd, past chairmen J. B. Terbell and Milo A. Nice and the board of directors.

J. B. Terbell, chairman of the committee on by-laws, presented the recommendations of his committee and they were promptly approved. There

(Continued on page 117)

Manufacturers' Division, National Crushed Stone Association, at luncheon business meeting. At head of table, left to right, are W. W. King, A. E. Conover, J. B. Terbell, W. S. Weston, Jr., Cott Farrell, J. R. Boyd, Miss Beatrice Gay, Milo A. Nice and D. McM. Blackburn

Hanna uses high- for clean-up

Works with 40-yard stripping shovel

Hanna Coal Company makes good use of the high speed and mobility of the rubber-tired Tournadozer at their Georgetown mine #12 near Georgetown, Ohio. Tournadozer is used for clean-up around their 40-yard stripper, in addition to many other scattered job assignments around the pits. The shovel stripping operation, which consists of overcasting overburden of limestone and sandstone shales up to 85', is on a full-time, 24-hour-day, 7-day-week basis.

Mine Superintendent, Donald D. Saxton, says:

"This machine has many advantages as a clean-up tractor under large stripping shovels. It has adequate traction for the job . . . and its greatest advantage to a wide-spread operation, such as this, is its extreme mobility." Here's what the Tournadozer operators had to say:

From Operator Paul Thomas:

"It sure has lots of power and will handle big loads of rock. I have used it to make fills and drains, too. On

LET

Tournadozer Trademark R133-Cat

LETOURNEAU

PEORIA, ILLINOIS

HIGH-SPEED RUBBER-TIRED

IT'S RUBBER THAT PUTS . . .

speed TOURNADOZER and handyman in Ohio pit

the fills I moved way more dirt . . . made more passes and carried more dirt each pass."

From Operator John Dulkoski:

"It sure is easy to operate and powerful. It's fast and maneuverable around a shovel. I have no trouble pushing out a stalled truck. It's good for hauling a lowboy down highway. I went to get a big Bucyrus-Erie 44B shovel at another pit. It was about 8 miles and I made it in about ½ hour. I like the fast blade action. There's not much greasing to do either. The quick shift lets me get in and out under shovel faster — doesn't hold up the shovel."

Your LeTourneau Distributor will be glad to show you how Tournadozer's 15 m.p.h. forward and reverse speeds, plus ability to go anywhere, will save you time and improve efficiency in your pits. Investigate now! Write, phone or wire today. Don't pass up an opportunity. Find out what the high-speed Tournadozer can do for YOU!

TOURNADOZERS

. . .THE ACTION IN TRACTION

SHEFFIELD
MOLY-COP
COPPER-MOLYBDENUM-ALLOY
Grinding Balls
Regular Carbon Steel Balls
Special Alloy Moly-Cop Ball
YOUR BEST BUY
The photos of fractured ball sections, reproduced above, show why Moly-Cop balls are your "best buy".
Note the clean break of fine martensitic structure of the Moly-Cop ball and its uniform high hardness to the core.
This is why Moly-Cop balls retain their shape longer, and grind more cement per pound of balls. Moly-Cop balls cut your grinding costs by wearing longer, grinding more efficiently, and by saving charging and handling time (less balls to handle).
Save money—specify Moly-Cop—your "best buy" in grinding balls.
Carbon and Alloy Steel, Ingots, Blooms, Billets, Plates, Sheets, Merchant Bars, Steel Joists, Structural Shapes, Road Guard, Reinforcing Bars
Welded Wire Mesh, Wire Products, Wire Rods, Fence, Spring Wire, Nails, Rivets, Grinding Media, Forgings, Track Spikes, Bolt and Nut Products
SHEFFIELD STEEL CORPORATION
HOUSTON KANSAS CITY TULSA
Export Representatives:
Canada: Ellsworth Wood, 10015-110 St., Edmonton, Alberta
All other Countries: ARMCO INTERNATIONAL CORPORATION Middletown, Ohio

Mechanize Limestone Mine

(Continued from page 81)

grizzly set in concrete, the top of which is about 3 ft. below floor line. The grizzly is constructed in this manner so that cars coming from other development workings on the 265-ft. level can be dumped more easily. The grizzly is 9 ft. wide and 20 ft. long and consists of two sections. The first 10-ft. section, which receives the slusher's load of rock, is checkerboarded with 7-in. openings. The fines here by-pass the crusher. The second section, closest to the slusher hoist, is a longitudinal grizzly with 18-in. openings. The coarse throughs drop to a steel bin immediately over the crusher pan feeder. The fines from the front section of the grizzly fall into the raise under the crusher. Here a steel partition is provided between the two sizes, curtained below the level of the crusher, so that the unit won't be choked off.

Part of the mine's production is coming from stopes located some 600 ft. south of the crusher grizzly and this rock is being handled in 5-ton, Granby-type cars built by C. S. Card Iron Works Co. of Denver, and is moved by a Sullivan electric slusher hoist, with a ⅜-in. rope for both pull-in and haul-back.

The cars are loaded at the stopes by slushers, and dump over a "Camel's Back" onto the crusher grizzly. One man attends to the pull-in of these cars, runs the slusher and operates the crusher as well. The crusher is of such capacity that the bin under it can be emptied in roughly one-third of the time that it takes to fill it.

The crusher is located in a chamber excavated about half-way between the 265- and the 320-ft. levels and is a permanent installation. Future workings below the 265-ft. level will be served through a flatly dipping incline connecting the 265- and 360-ft. levels using 5-ton Granby cars and a 75-hp. mine hoist that will raise the cars and dump them onto the crusher grizzly. The crusher is a 20- x 36-in. Austin-Western unit and is powered by a 75-hp. Westinghouse motor through "V"-belt drives. It is fed by an extra heavy, plate-type feeder with push button controls. The crusher setting at present is 7½ in., but this may later be reduced after certain improvements are made in the vertical kilns.

Immediately below the crusher is a raise from the 320-ft. level that is belled out for maximum storage. Here the crusher products and the fines from the checkerboard grizzly join. The foot of this raise is provided with two chutes with opposite discharge, and the trackage is such that while one car is being loaded, the other car is in transit to and from the surface. Heavy arc type gates, actuated by compressed air cylinders, are used for loading.

Specially built cars of 2-ton capac-

(Continued on page 120)

Crushed Stone

(Continued from page 115)

are two principal changes. The number of vice-chairmen has been reduced from six to three in order to have a more closely knit unit for efficiency. The board of directors remains the same in numbers but may be reduced later if desirable according to the by-laws. An executive committee has been formed consisting of the chairman, the three vice-chairmen and two additional elected members who serve on the board of directors of the National Crushed Stone Association.

Chairman W. W. King of the membership committee reported that there are now 81 members of the Division and that there are more applications for membership than are permitted according to the by-laws. Membership is limited to a maximum of 100.

Chairman D. McM. Blackburn of the resolutions committee expressed the appreciation of the Division for their cooperation to W. S. Weston, Jr., J. R. Boyd and his staff and Cottrell Farrell. Resolutions were read expressing appropriate tribute in the deaths of Miss Beulah Davies, for many years a member of the N.C.S.A. staff, past chairman of the Manufacturers' Division E. G. Lewis and Merle L. Jacobs, vice-president of Bethlehem Steel Co. Thanks were also expressed to the Hotel New Yorker for its cooperation in making the convention a success and it was resolved to send a telegram of regret to C. S. Huntington, board member, who was unable to attend due to illness. At the close of the meeting, a resolution was passed raising the annual dues for membership from $100 to $150 annually.

Officers Manufacturers' Division

The nominations for officers and directors of the Manufacturers' Division, N.C.S.A., as read by chairman of the nominating committee Milo A. Nice, were unanimously approved.

Cottrell Farrell, Easton Car and Construction Co. was re-elected chairman of the Division. Vice-chairmen named were Irwin F. Deister, Deister Machine Co., Fort Wayne, Ind.; R. C. Johnson, Simplicity Engineering Co., Durand, Mich.; and J. Craig McLanahan, McLanahan & Stone Corp., Hollidaysburg, Penn. Messrs. Farrell, Johnson and J. B. Terbell, American Manganese Steel Division, American Brake Shoe Co., New York, N. Y., will represent the Manufacturers' Division on the board of directors of the National Crushed Stone Association.

Directors named were E. C. Anderson, Kensington Steel Co., Chicago, Ill.; D. McM Blackburn, Hendrick Manufacturing Co., Carbondale, Penn.; A. E. Conover, Robins Conveyors Division, Hewitt-Robins Inc., New York, N. Y.; L. A. Eiben, Northern Blower Co., Cleveland, Ohio; S. S. Ellsworth, Ensign-Bickford Co., Simsbury, Conn.; R. F. Fiend, Allis-Chalmers Manufacturing Co., Milwaukee, Wis.; C. O. Friend, Nordberg Manufacturing Co., Milwaukee, Wis.; J. Harper Fulkerson, Cross Engineering Co., Carbondale, Penn.; E. J. Goes, Koehring Co., Milwaukee, Wis.; E. M. Heuston, Bucyrus-Erie Co., South Milwaukee, Wis.; Jess Richards, Link Belt Co., Philadelphia, Penn.; John M. Jeffries, Atlas Powder Co., Wilmington, Dela.; W. W. King, W. S. Tyler Co., Cleveland, Ohio; Kenneth Lindsay, Iowa Manufacturing Co., Cedar Rapids, Iowa; B. R. Maloney, E. I. du Pont de Nemours & Co., New York, N. Y.; L. C. Mosley, Marion Power Shovel Co., Marion, Ohio; R. M. Murdock, Frog, Switch & Mfg. Co., New York, N. Y.; Milo A. Nice, Hercules Powder Co., Wilmington, Dela.; F. O. Reedy, Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.; C. H. Roberts, Traylor Engineering & Mfg. Co., Allentown, Penn.; W. A. Rundquist, Pioneer Engineering Works, Inc., Minneapolis, Minn.; J. B. Terbell, American Manganese Steel Division, American Brake Shoe Co., New York, N. Y.; J. A. Trainor, Taylor-Wharton Iron & Steel Co., High Bridge, N. J.; F. B. Ungar, Ludlow-Saylor Wire Co., St. Louis, Mo.; Roy Wills, Lima Shovel & Crane Division, Lima-Hamilton Corp., Lima, Ohio; M. L. McCormack, Ingersoll-Rand Co., New York, N. Y.; R. D. Ketner, General Electric Co., Schenectady, N. Y.

Thermic Rock Drilling

HIGHWAY RESEARCH ABSTRACTS for October, 1948, carries a short discussion of the Lebrun method of thermal drilling in quarrying and construction. In this process a stream of oxygen is passed through a steel or iron tube packed with wire—the ratio of wire to tube diameter being critical. The tube is ignited at the working end and the metal burning in the oxygen forms a fluid slag with the silica in the rock.

Penetration progresses at a rate of about 5 in. per min. This method of drilling is especially adapted to highly siliceous rocks, while calcareous and other basic rocks are hard to drill by this method unless powdered silica is fed into the hole being drilled.

Horizontal drilling is self-cleaning, but the slag tends to run back in vertical dry drilling over 10-ft. deep, while pockets of molten Fe_2O_3 may be formed. This condition may be overcome by projecting properly timed shots of water into the point of the lance so that the flashed stream ejects the slag. It is possible with this process to drill in 12-ft. of water.

Study Wet Ground Mica

THE WET GROUND MICA ASSOCIATION, INC., New York, N. Y., has retained the Centro Research Laboratories, Inc., Briarcliff Manor, N. Y., to conduct a research program to develop new and improved methods of utilizing the special characteristics of wet ground mica.

N.A.L.A. Convention

(Continued from page 107)

product, or combining it with finely ground blast furnace slag, especially slag from a manganese steel operation, for such slag has a high manganese content. It also contains a lot of rarer, but important minerals, such as copper, boron, zinc, etc.—all essential to plant life if a nourishing crop is to be grown.

Limestone Spreading

B. T. Scharbach, director, presided at the second morning session. M. L. Dake, Cooperative Grange League Federation Soil Building Service, talked on "Moistening Bulk Lime for Spreading." He said his company's agstone is 98 percent minus 20-mesh and 50 percent through a 100-mesh screen, and under custom spreading, dust losses when tied in with equipment upkeep, make dampening of the agstone desirable. A 5 percent moisture content is about ideal for proper spreading, he said, and added that the double fan type spreader was the most desirable unit for this purpose as it is more compact, has a higher capacity than other types, is workable in hilly fields, and can pass through narrow gates easily. He said one washed dolomitic limestone plant distributed agstone with a moisture content as high as 12 percent without difficulty using this type of spreader.

Putting the dry dust through a paddle-type or pug mill, with adequate water controls so as to get suitable moisture content, was practiced, he said. Stockpiles should be 5000 tons or more, and watered occasionally, if necessary, as larger stockpiles retain a moist base. A clamshell or Haiss loader is used for reclaiming. With the clamshell, the wetter base material can be easily re-mixed with the dryer materials. Moistening of the material is preferred by the farmer, producer and spreader. He also pointed out that stockpiles sometimes pick up moisture in cold weather.

W. E. Callahan, of the Association of American Railroads, gave a review of the "Status of Supply of Freight Cars," stating that 1948 was a heavy industrial year and that the start of 1949 indicated a temporary business lull. He said coal production was off with coal stockpiles up. Steel was up and grain production was the greatest ever. Hoppers and freight cars increased in numbers during the past year with gondolas decreasing. The overall freight car situation for 1949 should be slightly better than for 1948. Robert N. Nash, also of the Association of American Railroads, presented data to justify freight rate increases.

C. P. Haun presided at the noon luncheon. H. P. Fowler, General Counsel of the Chamber of Commerce of the United States, spoke on the subject, "Delivered Pricing and the Cement Decision." Uncertainty as to the

(Continued on page 118)

future was the key-note of his short talk. The afternoon session was confined to routine matters relating to the association, and the election of officers and directors. Number of the latter was increased from 45 to 60.

The present officers were unanimously re-elected to serve for another year. The following directors were appointed to the executive committee: Arthur Alvis, Butler, Mo.; A. R. Armbrust, Washington C. H., Ohio; C. P. Haun, Nashville, Tenn.; Earl Heckathorn, Delphi, Ind.; J. B. Mount, Shouns, Tenn.; C. A. Munz, Utica, N. Y.; L. W. Preston, Glasgow, Ky.; Charles Rich, Swanton, Vt.; B. T. Scharbach, Standish, Mich.; R. M. Seifried, Findlay, Ohio; and Vincent Shea, W. Chelmsford, Mass.

The following new directors were named: W. L. Bryan, Northfield, Minn.; W. E. Burall, Frederick, Md.; W. Ray Clark, Plattsburg, Mo.; J. W. Gardner, Dayton, Tenn.; A. C. Halquist, Sussex, Wis.; L. W. Hayes, Kansas City, Mo.; Mrs. Stanley D. Pace, Burkesville, Ky.; R. M. Patton, Columbus, Ohio; R. J. Pleasant, Tulsa, Okla.; T. C. Pollock, Burlington, Vt.; L. W. Preston, Glasgow, Ky.; R. H. Schneckloth, Lowden, Iowa; B. F. Taylor, Cowan, Tenn.; and Howard M. Thomas, Ft. Scott, Kan.

The following directors whose terms expired were re-elected: C. R. Binkley, Dry Run, Penn.; A. M. Blumer, San Francisco, Calif.; W. J. Clark, Munnsville, N. Y.; J. V. Clisham, Baltimore, Md.; C. E. Duff, Charles Town, W. Va.; George D. Jastram, Canaan, Conn.; Richard Lutz, Oshkosh, Wis.; Norbert Neuheisel, Eau Claire, Wis.; Joe O'Brien, St. Paul, Kan.; Charles Rich, Swanton, Vt.; E. T. Spidle, Montgomery, Ala.; and M. J. Wurtenberger, Lockport, N. Y.

Directors whose terms have not yet expired, are: Arthur Alvis, Butler, Mo.; A. R. Armbrust, Washington C. H., Ohio; H. E. Battin, Jr., S. Bethlehem, N. Y.; C. A. Broecker, Kentland, Ind.; J. M. Deely, Lee, Mass.; J. W. Etchison, Casey, Ill.; N. G. Farber, Franklin, N. J.; Leonard Dry, Mercersburg, Penn.; H. C. Gray, Tulsa, Okla.; C. P. Haun, Nashville, Tenn.; Earl Heckathorn, Delphi, Ind.; W. E. Horne, Newton, N. J.; Joe Howard, Ozark, Mo.; John C. Jeffrey, Parma, Mich.; H. W. Lamb, Branchton, Penn.; D. L. McCullough, Birmingham, Ala.; Richard Mayleas, New York, N. Y.; J. B. Mount, Shouns, Tenn.; C. A. Munz, Utica, N. Y.; Perry Pederson, Harmony, Minn.; E. M. Prettyman, Conshohocken, Penn.; Knott Rankin, Rockland, Maine; Fred Roberts, Norristown, Penn.; B. T. Scharbach, Standish, Mich.; R. M. Seifried, Findlay, Ohio; Vincent Shea, W. Chelmsford, Mass.; Dermot Shemwell, Albany, Ga.; D. U. Smith, Ashley Falls, Mass.; Paul Thesen, Quincy, Ill.

On the last day of the meeting, inauguration day, the association had available two television sets so that members and guests could see the high points of the ceremonies.

Quarrying Florida Rock

(Continued from page 103)

1, and remove everything from one-inch down which is disposed of as follows:

Below three-sixteenth inch sand is flumed to three sand drag classifiers.

From ½-in. to 3/16-in., a large percentage is placed by conveyor on the block plant tunnel, and from one inch down, including a proportion of the ½-in., is placed on the transit mix concrete tunnel. Oversize goes to two Cedarapids 40-in. hammer mills, which are protected from tramp iron by four heavy duty Eriez permanent magnets.

In order to produce additional quantities of pea rock for the block plant and concrete rock for the transit mix installation, it was necessary to make a change just after the primary crusher. A second belt conveyor was installed immediately above and parallel with the first mentioned belt. A high percentage of the material passing the roll grizzly falls to the belt and is carried upward a short distance where the rock passes to a set of double roll 30-in. crushers. The crushed material from the secondary rolls is returned to the long belt, and the two Tyler Niagara screens do the rest. The new set-up looks something like Fig. 2. The two hammer mills take the wet material from the top of the two primary screens when ballast is not being produced and reduce it all to minus one-inch. Each of these hammer mills is operated by a 200-hp. electric motor, direct V-belt drive. On this type of rock, the hammers last approximately one week on the two-shift operation. The mills discharge to another No. 600 Tyler Niagara screen where the sizing operations are completed.

Sand produced by the mills is flumed to two additional sand drag classifiers which deposit the material on the transit mix concrete tunnel.

The main plant is a tall concrete structure about 72-ft. high with the screening equipment and hammer mills located on the two top floors. Finished material falls to the bins below from which it is loaded directly into cars or trucks. The pea rock, however, is carried by short belt conveyor to a concrete hexagonal bin of 300-ton capacity set away from the main structure about 25 ft. Some

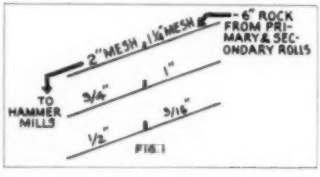


Fig. 1: Detail of two 4- x 10-ft. screens that operate in parallel and receive minus 6-in rock from roll crushers. Note divided decks

of the coarser aggregate is moved to ground storage on two elevator stacker belts. Two tailings ponds are available for disposal of wash water. These are the worked out portions of the pits. All stockpiles of sand and rock are located so as to readily serve the car loading section, which is a company-owned spur of the Florida East Coast Railroad. These piles also serve the transit mix plant, the block plant and the asphalt plant from four reclaiming tunnels. Sand drags are mounted on concrete pillars which are about 40-ft. high, and the sand falls to ground storage below. At the present, it is necessary for clamshell cranes to rehandle the sand as it is produced by the plant classifiers. This gives a much dryer sand which is necessary for the controlled production of concrete block, but plans are being worked on, and a vibrating belt dewaterer which will give immediate production of adequately dry sand is due for installation within the next two months. This unique dewaterer is being completed at Dings Magnetic Co., under the designed patents of the Fred T. Kern Co. of Milwaukee. An additional conveyor has recently been installed, as shown in one of the illustrations, which greatly facilitates the loading of rock and sand onto barges. This water transportation is of great service to the community as well as servicing the firm's transit mix operation located on Miami Beach.

Thermal Expansion Data on Earth Materials

RENSSELAER POLYTECHNIC INSTITUTE, Troy, N. Y., has started a research project to develop fundamental thermal expansion data on many earth materials. Such data should be especially useful to industries using and manufacturing ceramic materials such as silica, glass, tile, and refractories, and might interest producers and users of concrete materials. The fundamental data will be obtained over a period of several years, according to present plans. Professors Joseph L. Rosenholtz and Dudley T. Smith, who recently set up special testing equipment in the Department of Geology and Mineralogy, have started the work on the project. Purchase of the equipment was provided largely by Rensselaer's Research Fund and by grants-in-aid from the Carnegie Corp., New York, N. Y., and the Research Corp., New York. The investigators will determine the linear thermal expansion of rocks and crystallographically-oriented mineral specimens at temperatures ranging from 20 deg. C. to 1400 deg. C. (68 deg. F. to 2550 deg. F.) Mineral transformation temperatures also will be determined. Much of the equipment to be used has been specially designed and developed for this project.

1200 TONS A DAY

Four "Caterpillar" Diesel D13000 Engines power the entire plant of the DuPre Sand & Gravel Co., Victoria, Texas. The company's daily output is 1200 tons—and these dependable, economical engines play a major part in the performance.

Two of the engines have logged more than 25,000 hours each—one running an A. C. No. 6 crusher, the other a No. 6 crusher plus a 2-cubic-foot digging elevator. The other two, V-belted to a single pulley, drive a 10-inch Amsco Sand Pump 10 hours a day, 12 months a year.

Partner W. L. DuPre says: "Throughout our many years of operating sand and gravel plants in South Texas, we have come to realize that 'Caterpillar' Diesel Engines are the best for our particular operation. They have proved to be the smoothest in operation and certainly the most economical we have ever used."

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

Two "Caterpillar" Diesel D13000 Engines drive a 10-inch Amsco Sand Pump on the DuPre Sand & Gravel Co. operation near Victoria, Texas. Average per hour — 90 yards.

One of the two D13000s that furnish all the power for the DuPre crushing plant. Since installation in 1938, each has logged more than 25,000 hours.

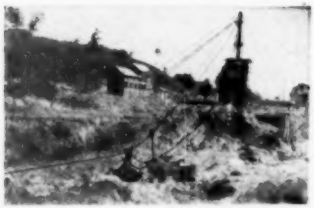
CATERPILLAR

REG. U. S. PAT. OFF.

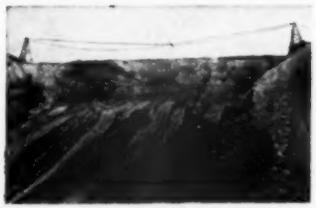
DIESEL

ENGINES • TRACTORS
MOTOR GRADERS
EARTHMOVING EQUIPMENT

FOR ALL DIG-AND-HAUL WORK!



Slackline Cableway moves blasted gypsum rock to crushing plant.



Scraper machine with tail end rigged for rapid shifting, makes wide cut.

Sauerman Machines Cut Costs

Under one man control, a Sauerman Scraper or Slackline Cableway can reach out 1,000 ft. or more and dig, haul and dump sand, gravel, clay, or any bulk material. Simple operation! Economical use of power!

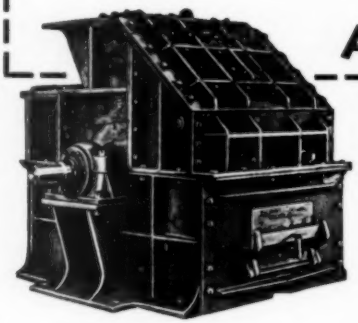
A Sauerman machine can be installed to reach across a pit, pond, river or stockpile, or up to the top of a hill. It moves material rapidly anywhere within its wide radius. Flexible for any ground conditions. Costs only a few cents per cubic yard handled. Gas, electric or diesel.

Illustrated catalog mailed on request.

SAUERMAN BROS., INC.
530 S. Clinton St., Chicago 7

Long Range Material Handling Machines

HIGH EFFICIENCY REDUCTION for *Your* CRUSHING NEEDS with AMERICANS



From agstone to roadstone sizing, Americans offer the *flexibility* and rigid control of sizing — to make each specific reduction job more efficient — and more profitable! For better agstone sizing, American ACS Hammermills are designed with a special *center feed* — to lengthen the travel of stone and give a higher ratio of fines. With the conventional front feed, minimum fines are assured. Easy external adjustments give the individual size control and flexibility to meet your changing market needs.

Three different hammer types are furnished to give the exact reduction you require. A. "Brute," for heavy. B. "Broadhead," for medium. C. "Splitter," for fine.

A. BRUTE for heavy

B. BROAD-HEAD for medium

C. SPLITTER for fine

Write for your copy of "Better Stone Crushing."

American PULVERIZER COMPANY

Originators and Manufacturers of Ring Crushers and Pulverizers

1245 MACKLIND AVE.
ST. LOUIS 10, MO.

Mechanize Limestone Mine

(Continued from page 116)

ity are used in the hoisting service. These cars were built by the Geiger Iron Works, Stockton, Calif., and use Card wheels, axles, and bearings. These cars are handled easily at the shaft bottom, but require air-cylinder dumping at the top.

At the surface, the cars are moved off the cage about 5 ft. and are dumped into a surge bin from which a plate feeder discharges the rock to a 36-in. belt inclined at 21 deg. which delivers to a double-decked screen. The oversize from the 4½-in. top deck passes onto a 30-in., Chain Belt Co. cross belt inclined at 18 deg. which carries this size rock to a new steel storage silo for the vertical kilns. The minus 4½-in., plus 1½-in. material, drops to the hammer mill. The minus 1½-in. by-passes the hammer mill and joins the mill product at the elevator boot from where the rock is elevated to the top of the sizing plant.

A cage is used for hoisting the rock and for hoisting men and material. For an operation of this kind, cage hoisting has some advantages over skip hoisting as there is very little lost time. The total hoisting cycle is about 2½-minutes. The hoist used on the shaft is a Jeffrey Mfg. Co. unit powered by a 150-hp. motor. On the lower levels two Emco air loaders are used for drift work and miscellaneous loading.

All drifting and much of the stoping is done with Gardner-Denver, CF-79, automatic feed drills, using 1-in. hex steel and jackbits. Raising and some stoping is done with Chicago Pneumatic and Gardner-Denver wet stopers. For floor undercutting, Ingersoll-Rand, S-49 jackhammers with either 1-in., or ⅞-in. hex steel with jackbits are used. All plugging is done with a very light Gardner-Denver air hammer using ⅞-in steel.

Explosives used are Atlas Gelodyn, No. 4 for drilled holes, and 75 percent gelatin (2-in. dia. x 4-in.) for bulldozing boulders. The later method of breaking boulders is on the increase. For some of the stope shooting, Atlas Rockmaster electric caps are used to good advantage.

Production by hand methods was 5 to 6 tons per man shift underground. At present, 20 tons per man shift underground are being produced, and the company is paying about 2½ times the 1940 wage scale. Capacity per day is 250 to 300 tons. Induced draft on the vertical kilns has been inaugurated recently and is working out quite well.

S. L. Arnot is resident manager at the Sonora operation and Walt Stinson is superintendent. Joe Cary is mine foreman. The main offices of U. S. Lime Products Corp. are in Los Angeles. Kennedy Ellsworth is executive vice-president.

Sand-Lime Brick

(Continued from page 101)

facturer has tried any of these especially hydrated magnesium limes, but it is the effect of delayed hydration of the magnesia after the products are in the autoclave that accounted for previous rejection of magnesium limes for sand-lime brick manufacture. So far as anyone knows, the hydrated magnesia would react equally well with the silica aggregate.

Registration

The following attended the meeting:

A. L. Bouling, Pre-Shrunk Masonry Sales Co., Roanoke, Va.
Edmund H. Brooker, National Building Supply Co., Washington, D. C.
J. W. Van Brunt, Grand Rapids Brick Co., Grand Rapids, Mich.
Ralph E. Cromis, Boice Builders' Supply Co., Pontiac, Mich.
D. G. Darling, and L. Bishop, Toronto Brick Co., Ltd., Toronto, Ont.
J. Finkbeiner, Michigan Pressed Brick Co., Detroit, Mich.
Carl Miller, Pacific Brick Co., Pacific, Mo.
Claude Paul, Detroit Brick & Block Co., Detroit, Mich.
C. A. Perkins and F. C. Perkins, Mishawaka Brick Co., Mishawaka, Ind.
H. D. Robertson, and A. S. Modil, Harbour Brick Co., Toronto, Ont.
Ellis F. Robinsom, Grande Brick Co., Grand Rapids, Mich.
Nathan C. Rockwood, ROCK PRODUCTS, Chicago, Ill.
J. J. Ryan, and Leo J. Ryan, Ryan Building Supply Co., Windsor, Ont.
Theron Tayler, Tayler Engineering Service, Detroit, Mich.
R. R. Valier, Badger Brick Co., Barton, Wis.
Dr. Lansing S. Wells, National Bureau of Standards, Washington, D. C.

Safety Films Series

NATIONAL SAFETY COUNCIL has released a new series of six sound slide films entitled "Human Factors in Safety" to aid management in foreman training programs. Cartoon techniques are used in two of the 35 mm., 33⅓ r.p.m. films, which deal with production and job attitudes, as well as safety. The complete series shows supervisors how to train new workers, how to keep experienced workers alert, and how to win respect, cooperation and loyal support of employees.

Building Outlook Good

NATIONAL GYPSUM Co., Buffalo, N. Y., expects 1949 to be an outstanding year and one of capacity production, according to Melvin H. Baker, president. "We expect to sell all the products we can make in 1949," he said, "and now that we have completed our postwar expansion program, we will be producing more than ever before."

We Invite Your Inquiries

MADE ONLY BY

A. LESCHEN & SONS ROPE CO.

ESTABLISHED 1857

5909 Kennerly Ave., St. Louis 12, Mo.

New York · Chicago · Denver

San Francisco · Portland · Seattle

PINCH VALVES

MASSCO
GRIGSBY

No metal touches pulp or liquid. No glands. Freezing does not destroy sleeve.

NO METAL CONTACT

Successfully used for transporting abrasive and/or corrosive pulps and liquids . . . wherever severe wear makes replacement of metal type valves too costly. Collapsible sleeve of rubber or synthetic. Closes tight even on solid particles. No packing glands; not destroyed by freezing. Sizes: 1" to 12" dia.

THE MINE & SMELTER
SUPPLY COMPANY

Denver Salt Lake City El Paso

1775 Broadway, New York

WHETHER IT'S LIMESTONE SAND OR GRAVEL, UNIVERSAL IS THE MOST PROFITABLE VIBRATING SCREEN MONEY CAN BUY.

Write today for Catalog No. 107 on Screens and Screening.

Type "M" 42"x96" Double Deck

UNIVERSAL VIBRATING SCREEN CO.

RACINE — WISCONSIN

Pulverizers

Have you investigated our new BRADLEY HERCULES MILL?

Unquestionably the last word in Economy and Simplicity.

(Send for New Catalog No. 39)

BRADLEY PULVERIZER CO.

ALLENTOWN, PENNA.

Labor Relations Trends

(Continued from page 63)

then acts upon us pyschologically as an obstruction, especially in times of crisis, to the critical exercise of a reasoned judgment—Laski."

The quotation is rather difficult for us to comprehend at first reading, but it is given for the benefit of readers who may better understand its relevancy to the issue before the Court. In any event it is a brief example of the kind of philosophy which seems to permeate Washington officialdom. The following quotation is Mr. Justice Frankfurter's own philosophy regarding the Court's decision in this case:

"The right of association, like any other right carried to its extreme, encounters limiting principles. At the point where the mutual advantage of association demands too much individual disadvantage, a compromise must be struck. When this point has been reached—where the intersection should fall—is plainly a question within the special province of the legislature. This Court has given effect to such a compromise in sustaining a legislative purpose to protect individual employes against the exclusionary practices of unions. The rationale of the Arizona, Nebraska, and North Carolina legislation prohibiting union-security agreements is founded on a similar resolution of conflicting interests. Unless we are to treat as unconstitutional what goes against the grain because it offends what we may strongly believe to be socially desirable, that resolution must be given respect."

Further on in this essay Mr. Justice Frankfurter makes it quite evident that union leaders' insistence on compulsory union membership might well prove a detriment to union labor in the long run. He quotes the late Justice Brandeis' observations on this subject at some length. Altogether, from Mr. Justice Frankfurter's views, a layman, like ourselves, could reasonably draw the conclusion that the Justice is warning labor not to go too far, and at the same time is also warning it not to look to the Court for redress from such restraining laws as may result from over-reaching its present advantages. His theory (and apparently that of the Court) is: "Even where the social undesirability of a law may be convincingly urged, invalidation of the law by a court debilitates popular democratic government. Most laws dealing with economic and social problems are matters of trial and error."

So, it may be added for the benefit of employers and management, who like us have held a view that our courts, and especially the U. S. Supreme Court, were created partly to protect minority groups from being trampled to death by thoughtless, heedless, and often reckless legislative enactments out of keeing with the spirit of the Constitution, that the

courts, according to Mr. Justice Frankfurter, are now and will hereafter be ready to support any kind of social or economic legislation not actually prohibited by the Constitution. Since the framers of the Constitution could not foresee the results of mob rule in the 20th century, they could not be expected to have supplied prohibitions against some of the legislation now on the books and more that is soon expected. But, it seems to us the Justice overlooks the historical fact that the founders of the United States thought they were insuring the preservation of a *representative republic* and not a *"democracy."* The two are quite different forms of government, although in this day and generation few seem to appreciate it. The very system of checks and balances in the Constitution, to which the Justice refers, was established primarily to prevent hasty and unwise mob (or "democratic") action. Even Thomas Jefferson, the alleged patron saint of present-day democracy, did not contemplate with any satisfaction a government controlled by the votes of city mobs. He specifically feared for the safety of the Republic in such an eventuality. He envisioned an agrarian republic with voters having an individual sense of responsibility through their ownership of real property.

Management Conference

MARQUETTE CEMENT MANUFACTURING CO., Chicago, Ill., recently conducted the ninth in the bi-weekly series of management conferences now being held regularly at each of the five Marquette plants as part of the company's management development program. D. S. Colburn, vice-president of the company, conducted the conferences. Speaking informally to foremen groups, he discussed company growth, policy and local plans for future development.

Cement Company Expands

UNIVERSAL ATLAS CEMENT CO., New York, N. Y., has announced that it is completing the purchase of several parcels of land in Botetourt County, near Roanoke, Va. The lands, which have been under option for some time, are said to have been proven by core drilling to contain limestone and other materials suitable for the manufacture of cement.

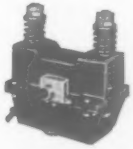
Installs Dust Collector

CALAVERAS CEMENT CO., San Francisco, Calif., has begun installation of a Cottrell electric precipitator at its San Andreas, Calif., plant to recover stack dusts. The new precipitator installation is being added to the two now in operation and will cost nearly $200,000.

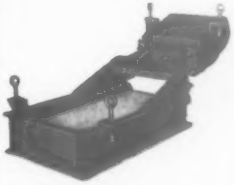
For Material-Handling "KNOW-HOW" Call on SYNTRON
REG. TRADE MARK

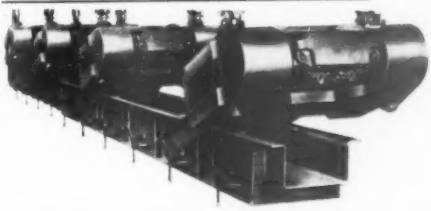
"Vibra-Flow"
VIBRATORY FEEDERS
Up to Hundreds of Tons Per Hour
Instant Control of Flow

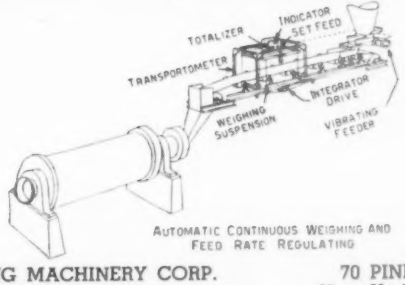
Provide a smooth, effortless flow of bulk material — dry or damp, hot or cold — to belt conveyors, crushers, driers, ball mills, packaging machines, etc. —
Write for illustrated folder
SYNTRON CO.
450 Lexington Homer City, Pa.


ELECTRIC VIBRATORS
for bins, hoppers and chutes

VIBRATING GRIZZLIES


VIBRATING SCREENS


LONG VIBRATING CONVEYORS



AUTOMATIC CONTINUOUS WEIGHING AND FEED RATE REGULATING

SINTERING MACHINERY CORP.
Transportometer Division
70 PINE STREET
New York 5, N. Y.

8 GILSON FEATURES

1. Makes test quickly and accurately
2. Two to seven separations simultaneously
3. Screen trays independently removable
4. Trays balanced to same tare weight
5. Visible separation to refusal
6. Few moving parts
7. Sturdy construction
8. Size range 4" to 200-mesh

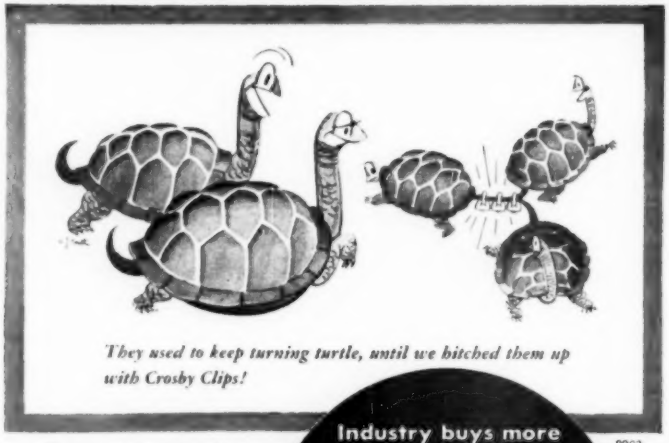
GILSON Mechanical Testing Screen

• This machine is designed for the efficient sizing of test samples of crushed stone, gravel, slag and similar materials. It accommodates samples up to one cubic foot, making from two to seven separations simultaneously, in five minutes or less.

Smaller amounts of very fine materials may be handled efficiently and the screen used for research or other special mass separation jobs down to 100-mesh or finer.

Where exacting specifications are required the Gilson Screen eliminates guesswork—avoids errors and reduces operating delays. A controlled and truly guaranteed product is now possible with the Gilson Testing Screen. For fast accurate sizing of coarse or fines from 4" to 200-mesh specify a Gilson Testing Screen.

GILSON SCREEN CO. BOX 186 MERCER, PENNA.



They used to keep turning turtle, until we hitched them up with Crosby Clips!

9903

Industry buys more

CROSBY CLIPS

than all other drop-forged fasteners!

Fasten wire rope with CROSBY CLIPS. Safe, simple, speedy . . . applied anywhere by one man with one wrench. *Drop-forged*, not cast. Hot dip galvanized. All sizes . . . for $\frac{1}{8}$" to 3" wire rope. Distributors everywhere; made only by AMERICAN HOIST AND DERRICK CO., St. Paul 1, Minnesota.

ALSO MAKERS OF THE AMERICAN HANDIWINCH AND AMERICAN BLOCKS AND SHEAVES

Armature Maintenance

(Continued from page 109)

cases, the armature winder had attempted to prolong the life of the cores by lathe cutting additional grooves in the lamination for the application of additional band wires to supplement the locking-in effect of the slot sticks. Such groove cutting removes essential iron that is required in the magnetic balance of the armature and the heating under new tie bands can rise to dangerous values. Close scrutiny by experts would result in the junking of such decrepit cores and replacing them with new ones. Many times the armature shafts also are badly worn, and so there is no profit in prolonging the time when the complete assembly is sent to the scrap heap.

Armature Shipping Case

Since safe transportation of the armature, both from the site of the motor (if only the armature is removed) and back to the scene, is of prime importance in the long period of usefulness desired of any investment, it is suggested that a carrying "box" be provided that will fit the average core. This type of box is best when fitted with dual handles in line with the axis so that two men can carry it with ease. Small cores may need a bit of shimming up with blocking to prevent their being damaged by rolling the box. A second idea is to cut a piece of heavy sheet metal stock large enough to encompass the core. In practice the core is rolled in this sheet and the overlapping ends are secured with a suitable toggle type clamp. With such protection, a core can be transported anywhere since it may be rolled or stacked without the delicate laminations being damaged.

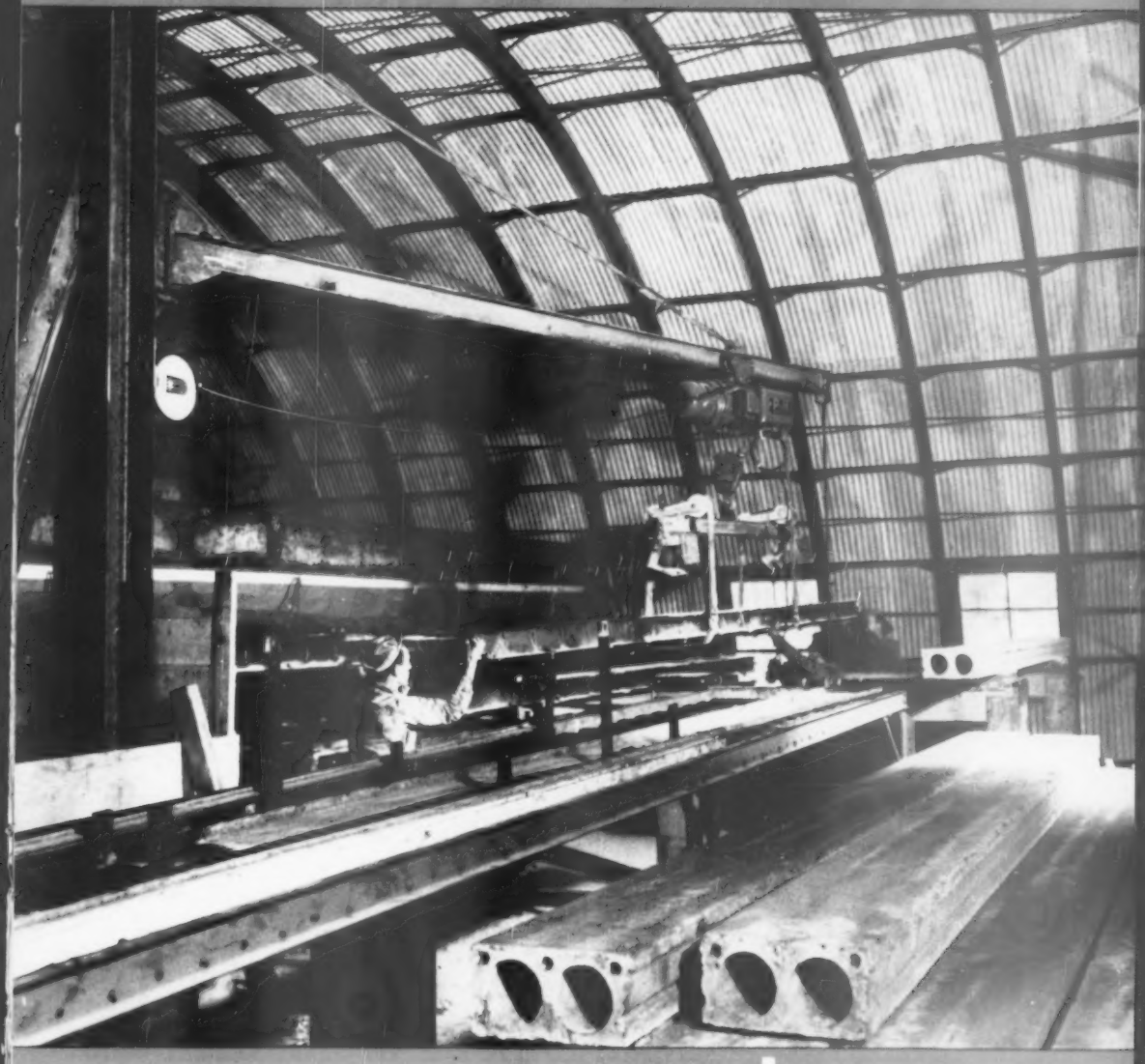
Spare armatures held in the shop should be stacked on special racks arranged so that the weight of the armatures is on the shafts and not on the cores themselves. Long continued pressure on a localized spot will eventually distort laminations. This is especially true where the careless practice of stacking armatures like cordwood is part of the routine. A second precaution is to carefully wrap each armature in heavy paper, sealing the edges tightly closed with tape. This will keep contents free from harmful dusts, and will prevent the drying out of essential varnish oils used in the insulation materials. Each package should be fully identified so that no delay occurs when a spare is desired on short notice.

Bituminous Coal Research

THE BOARD OF DIRECTORS, Bituminous Coal Research, Inc., has authorized a research budget of over one-half million dollars for the second consecutive year. This amount will finance the development of new equipment, methods for more efficient coal utilization, and fundamental research.

CONCRETE PRODUCTS

CONCRETE UNITS · READY-MIXED CONCRETE



Handling of Precast Floor Slabs Mechanically at Durastone Flexicore Corp. Plant, Sayesville, R. I.

A SECTION OF ROCK PRODUCTS

GET BETTER

CONCRETE PRODUCTS with DURAPLASTIC

at no extra cost

With Duraplastic, concrete products manufacturers have the advantage of using a damper, more cohesive mix—one that holds together better, feeds better through machines. For machine-made products—block, pipe, brick, draintile, silo staves, etc., these are important features. Finished units are more compact, exhibit greater resistance to passage and absorption of water.

***For superior concrete products** at no extra cost, use Atlas Duraplastic cement. It complies with ASTM and Federal specifications and sells at the same price as regular cement. No unusual changes in procedure are required. Send for further information. Write to Universal Atlas Cement Company, (United States Steel Corporation Subsidiary), Chrysler Building, New York 17, N. Y.*

OFFICES: Albany, Birmingham, Boston, Chicago, Dayton, Des Moines, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.

CP-D-81

ATLAS DURAPLASTIC

TRADE MARK REG. U. A. C. CO.

AIR-ENTRAINING PORTLAND CEMENT

MAKES SUPERIOR CONCRETE PRODUCTS AT NO EXTRA COST

"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—ABC Network*

INDUSTRY NEWS

Concrete Farm Improvements

CONCRETE has been named as the best ratproof material by a great number of farm building authorities, for the information of those who would promote sales to farm purchasers. Old buildings can be made ratproof easily with well-built concrete floors, foundations and walls. A concrete foundation wall may be placed under an old frame building, and the space above the sill and between the studs filled with concrete. Farm buildings also may be improved by supporting them on concrete piers which give a clear open height of 18 in. under the building. The space between joists and studs is filled with concrete. Further information on construction of concrete farm improvements may be obtained from the Portland Cement Association.

Canadian Asphalt Plant

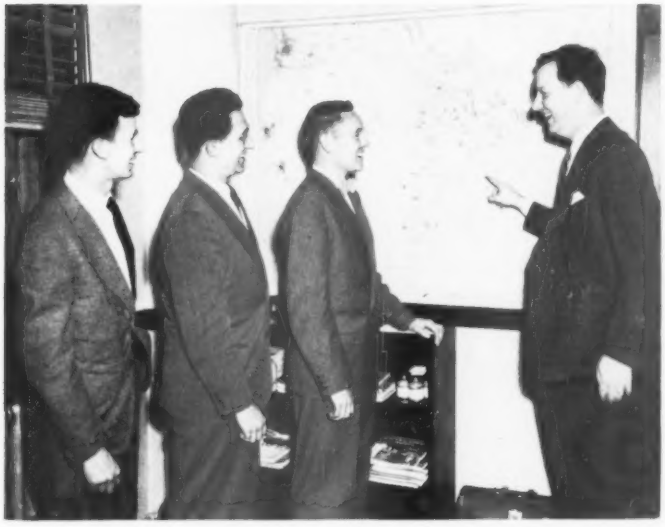
MIXED ASPHALT AND CONTRACTORS' SUPPLIES, LTD., has been organized in Hamilton, Ont., Canada, and has taken over the former Red-D-Mixed concrete plant on Main Street West which will be converted into a hot and cold asphalt mix plant. E. V. Breckon, formerly president of Mixed Concrete Supply and Red-D-Mix Concrete (Hamilton) Ltd., is president of the new firm; Duncan Campbell is vice president and managing director, and James P. Phin is treasurer.

Produces Lightweight Expanded Slag Aggregate

LONE STAR STEEL CO., Dallas, Texas, will begin the production of Celocrete lightweight expanded slag aggregate at its Lone Star, Texas, plant, it has been announced. Material produced from the company's blast furnace, said to be one of the largest furnaces in the country, will supply block manufacturers in Texas, southern Arkansas, southern Missouri and western Louisiana.

Awarded Paving Contract

ARIZONA SAND AND ROCK CO., Phoenix, Ariz., has been awarded a $62,000 contract for a street improvement project in the area. The project calls for the laying of 13,636 sq. yd. of 2½-in. thick asphaltic concrete paving on a gravel base 5½ in. deep, and installation of 15,918 sq. ft. of concrete sidewalk. This company also has been awarded a contract for $237,726 for work on the Sky Harbor Municipal Airport.



Universal Concrete Pipe Co., Columbus, Ohio, is training new salesmen in home office and general operation procedures on a "grass roots" basis. "Schools" are being held for groups of from three to five new salesmen who, after a short work period in their areas, are given a picture of how Universal operates its 15 plants. The short course includes a tour of the company's plant in Columbus, visits to various departments in the home office, and discussions led by department heads. First group to be given this training was composed of, left to right, Louis G. Collins, Syracuse, N. Y.; John Vaske, Pittsburgh, Penn., and Wolcott Fuller, Kenvil, N. Y., who are shown with Thomas H. Monaghan, assistant to the president and sales manager

RAY GARRISON has purchased the West Memphis Readymixed Concrete Co. in Tennessee, and has renamed the firm, Garrison Readymixed Concrete Co.

B. AND L. READY-MIX CONCRETE CO., Winston-Salem, N. C., has started the manufacture of ready-mixed concrete at the rate of 800 cu. yd. per 10-hr. day. J. A. "Lon" Bolich and Clinton A. Lee are the owners. A. Guyer is plant manager.

LOUIS KILE AND NICK SPALLONE recently had their concrete block plant at Margaretville, N. Y., completely destroyed by fire.

BLOCK CRAFTERS, INC., Fairmont, W. Va., has been organized to manufacture cinder and concrete block. Capital is listed as $10,000, and M. A. McEntire, William Hostutler and Florence E. McEntire are the principals.

VALLEY READY MIXED CONCRETE CO., Appleton, Wis., has changed its stock from 500 shares, par value $100, to 2000 shares, no par value.

WEST DULUTH BLOCK, CO., Duluth, Minn., has been sold by Conrad Norman to Jack N. Dahl.

CARLTON COUNTY BLOCK CO., Barnum, Minn., has been refinanced and is open for business, according to Lyman Rhodes, owner.

EUGENE SCOTT has been appointed superintendent of the Sherman Concrete Pipe Co. plant in Johnson City, Tenn. I. W. Greene, company vice-president, and plant manager, has announced. Mr. Scott succeeds Hal Walsh.

AMERICAN CONCRETE BLOCK CO., Shreveport, La., operated by E. A. Hamner, Sr., E. A. Hamner, Jr., and R. F. Hamner, is now distributing steel windows and aluminum casements, in addition to cinder block. The block are certified by Underwriters' Laboratories, Inc., and, as a result, bear lower insurance rates than many other building materials, the owners state.

LOUISIANA CONCRETE PRODUCTS, INC., Baton Rouge, La., is manufacturing lightweight block under the trade name of Lacrete block. A standard unit is said to weigh approximately 24 lb.

ENCRETE, INC., Dayton, Ohio, has been granted a corporate charter, and will specialize in concrete engineering projects, specifically street and sewer work. The corporation is capitalized with 250 shares, $100 par value.

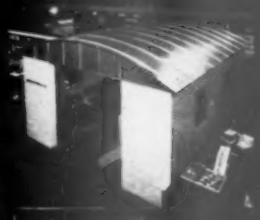
ANDREW CONCRETE CORP., Gillespie, Ill., a foreign corporation, has been granted a charter to manufacture all types of concrete products. Andrew J. Keeley is president of the concern.

JOSEPH BISCARO, owner of the Depew Concrete Co., Depew, N. Y., has applied for permission to construct a concrete mixing plant near that city. The plant, to be erected at a cost of $24,000, would be of steel and concrete construction.

A sensational new all-aluminum

You saw me at the Cleveland show,
I made a smash hit - watch me go!
Before the next year rolls around,
I'll outsell any roof in town.

I'm a complete sales package— parts pre-cut— bolt holes drilled



I'm rustproof— never need paint! I insulate by reflecting radiant heat

I come like this

REYNOLDS METALS COMPANY

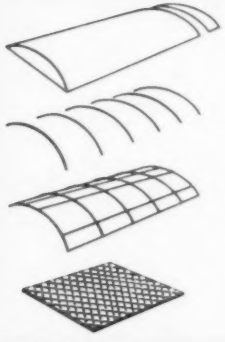
ALUMI-DROME DIVISION • 2099 SOUTH 9th ST. • LOUISVILLE 1, KY.

REYNOLDS ALUMINUM

roof for concrete block buildings

Lifetime

PATENTED ALL-BOLT CONSTRUCTION SPEEDS ASSEMBLY



BASIC UNITS are 16′ x 18′ and 24′ x 24′, lengths variable by 6′ sections.

ARCH CHANNELS are 3″ x 2″ x 2″ of *Lifetime* Aluminum, ¼″ thick.

LONGITUDINAL SPACER ANGLES are 2½″ x 2½″ *Lifetime* Aluminum, ¼″ thick.

SHEETS are rigid-embossed for greater strength, better appearance.

MAIL COUPON TODAY FOR COMPLETE DETAILS

Al Block
Reynolds Metals Company
2099 South 9th Street
Louisville 1, Kentucky

Please send me complete details on the Reynolds *Lifetime* Aluminum Roof Unit for concrete block buildings.

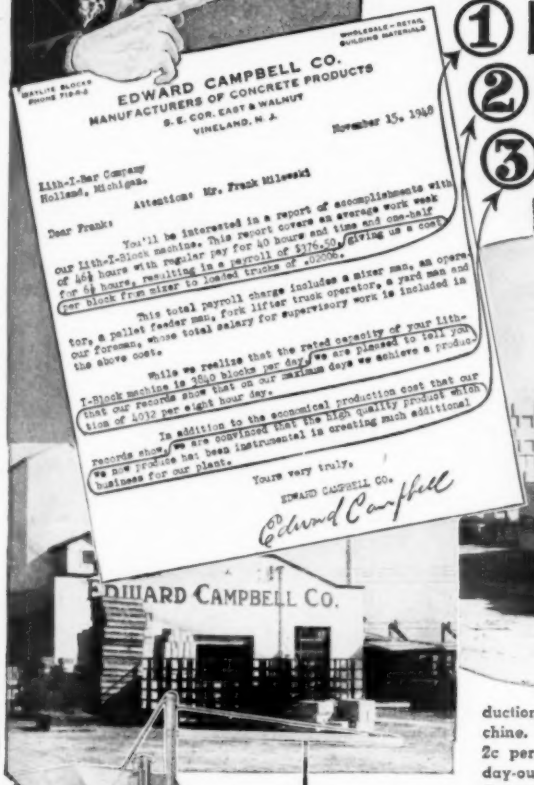
NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

With LITH-I-BLOCK And ONLY Lith-i-Block You Get All Three

① Lower Production Cost
② Maximum Production
③ Higher Quality Product



EDWARD CAMPBELL CO.
MANUFACTURERS OF CONCRETE PRODUCTS
S. E. COR. EAST & WALNUT
VINELAND, N. J.

November 15, 1948

Lith-I-Bar Company
Holland, Michigan.

Attention: Mr. Frank Milewski

Dear Frank:

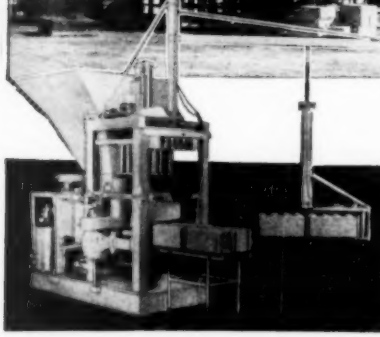
You'll be interested in a report of accomplishments with our Lith-I-Block machine. This report covers an average work week of 46½ hours with regular pay for 40 hours and time and one-half for 6½ hours, resulting in a payroll of $376.60, giving us a cost per block from mixer to loaded trucks of .0058.

This total payroll charge includes a mixer man, an operator, a pallet feeder man, fork lifter truck operator, a yard man and our foreman, whose total salary for supervisory work is included in the above cost.

While we realize that the rated capacity of your Lith-I-Block machine is 3840 blocks per day, we are pleased to tell you that our records show that on our maximum days we achieve a production of 4032 per eight hour day.

In addition to the economical production cost that our records show, we are convinced that the high quality product which we now produce has been instrumental in creating much additional business for our plant.

Yours very truly,
EDWARD CAMPBELL CO.
Edward Campbell



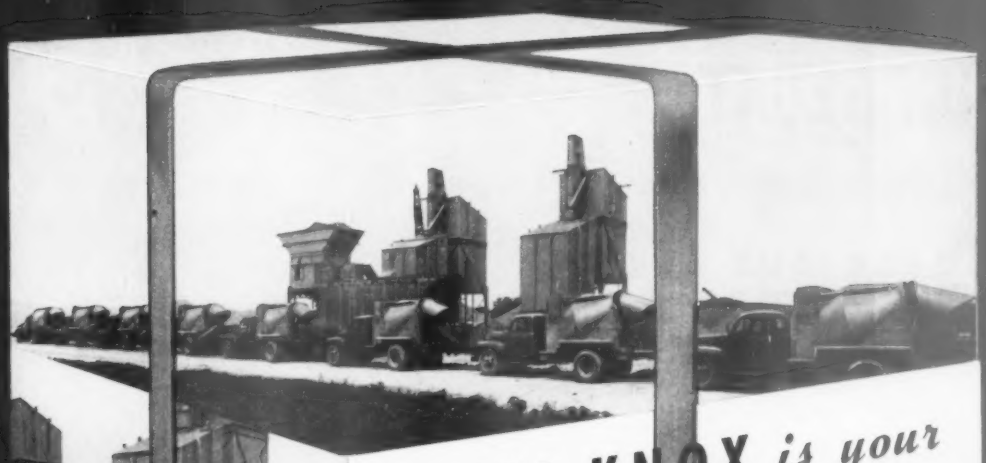
When your present block manufacturing equipment doesn't begin to meet the production records experienced by the Edward Campbell Co., of Vineland, New Jersey, it's time to do some investigating. If you decide to buy a new machine be sure you buy all three production factors wrapped up in one machine — the Lith-I-Block Machine. When you can make actual labor costs come so close to 2c per block as the Edward Campbell Co. is doing day-in and day-out, you're assured of maximum profits on your investment. Only a post card will bring you all the facts about this block making marvel of the 20th century.

LITH-I-BAR CO. Dept. CP-3 HOLLAND, MICHIGAN

LITH-I-BLOCK Machine

U.S. & Foreign Pats. Pending

Trade Name Registered



BLAW-KNOX *is your only source for a complete Ready Mixed "package"*

The outstanding performance rd of this Blaw-Knox installation proves that it pays to get ull your Ready Mixed equipment from one single source.

With the exception of the tru hassis every piece of equipment* shown here — the comp "package" — was furnished by Blaw-Knox and synchronize to a plant layout for batching water, aggregates and cemen d mixing and delivering the concrete to the forms as speci and required.

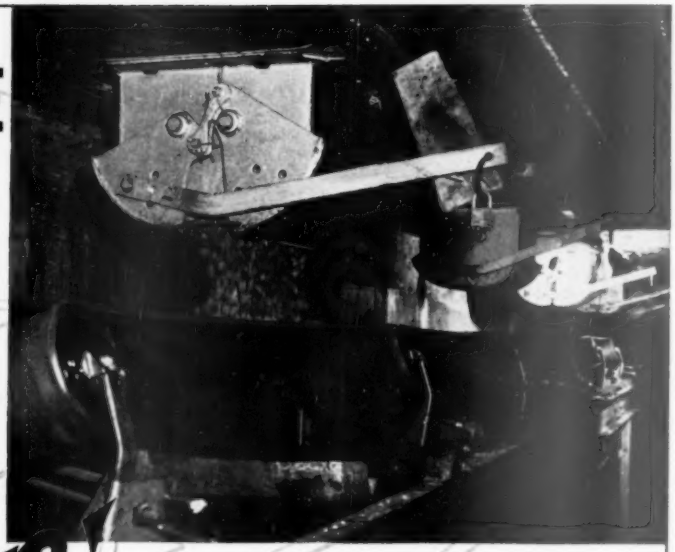
And this unbeatable, job-prov law-Knox combination pours 120 cubic yards of concrete ev hour, day after day — despite the fact that this is a three-sto eration!

That kind of performance me continuity of production and profit to the Ready Mixed op or . . . and that kind of performance is every day routine h equipment made by Blaw-Knox — your only single sou or a *complete* Ready Mixed installation.

*Eight 2-yard Hi-Boy Trukmixers
One 800-barrel portable bulk cement plant
One 800-barrel portable fly- ash plant
One 100-ton, 2-compartment aggregate bat lant

BLAW-KNOX ne and Ide

AGGREGATE IS A NOTORIOUS GATE CRASHER!

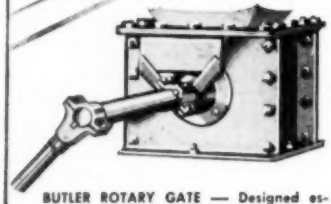


TREMENDOUS impact and tremendous wear, — those are the forces against which all gates on concrete plants, batching plants and sand and gravel plants must fight.

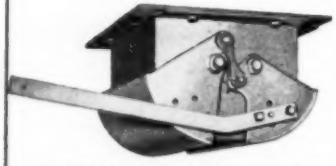
High volume production demands filling and discharge gates that operate smoothly, quickly and accurately; — gates *engineered* to take punishment and like it.

Long-lived BUTLER Gates are jam-proof and clog-proof. And quick-acting BUTLER Gates actually increase an operator's speed, — all characteristics that mean a welcome, extra profit.

BUTLER foresaw the upward swing in concrete production and diverted critical steel to building a stock of gate equipment. A limited stock, — it's true, for steel deliveries are still uncertain, — but for those who place their orders now, immediate shipments are possible.



BUTLER ROTARY GATE — Designed especially for handling cement. Carefully machined rotor fits tightly yet operates easily, — allows no leakage. Rotor may be removed for cleaning.



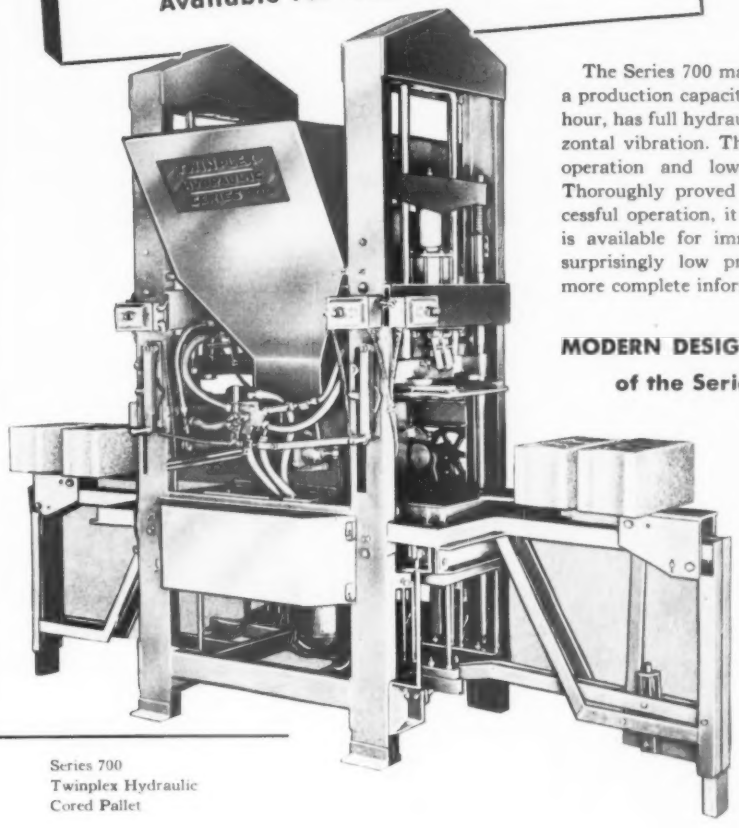
BUTLER CLAMSHELL GATE — Ideal for sand, gravel, crushed stone. All steel construction, electric arc welded. No cast gears to break or jam. Easily and quickly operated by a simple, fast-acting toggle.

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

TWINPLEX

HYDRAULIC BLOCK MACHINES

Available For Immediate Delivery



Series 700
Twinplex Hydraulic
Cored Pallet

The Series 700 machine illustrated, with a production capacity up to 720 blocks per hour, has full hydraulic operation and horizontal vibration. This means simplicity in operation and lower maintenance cost. Thoroughly proved by two years of successful operation, it is *sold outright* and is available for immediate delivery at a surprisingly low price. Write today for more complete information.

MODERN DESIGN FEATURES of the Series 700:

- Full Hydraulic Operation
- Horizontal Vibration
- Twin Set Mold Boxes designed for any Cored Pallet
- Shuttle Feed Drawer Speeds Production
- Production up to 720 Blocks per Hour
- Produces 1 to 4 sizes Simultaneously
- Vertical Agitators
- Quick Change Mold Box
- Quiet Operation

AVAILABLE SOON...

Twinplex Hydraulic plain pallet machines with production to 3600 blocks per hour will soon be available. These include the Master Twinplex Hydraulic Series 1500 which produces up to 1800 blocks per hour, and the Super Twinplex Hydraulic Series 3000 which produces up to 3600 blocks per hour.

Write for prices and more complete information

Twinplex Hydraulics, Inc.

2507 James St., Syracuse 6, New York Phone 73-1024

A FAST-MOVING MIXER...

3½—S Tilting Mixer. Capacity, 3½ cu. ft, plus 10% overload (A.G.C. rating).

Quickly spotted and towed, this half-bag mixer is a cost-cutting combination of strength, lightness and efficiency. Other Ransome Blue Brute Mixers in capacities up to 126 cu. ft.

AIR AT SHORT NOTICE...

A light-weight, handy compressor that can get around *fast!* Powers light hand-held Rock Drill, Paving Breaker or equivalent air tools through its easy-breathing Feather® Valves — with unfailing dependability and economy.

®Reg. U. S. Pat. Off.

60′ Contractor's Portable Compressor. Other Blue Brute Compressors up to 500′ capacity.

PLENTY OF RESERVE POWER...

Blue Brute Self-Priming Centrifugal Pump. Built in A.G.C. sizes to A.G.C. standards.

Now! a Contractor's Pump by Worthington, the world's largest pump makers, with fast, dependable pickup that saves time and money. Rust- and abrasion-resistant, with built-in self-priming.

FOUR FAST WORKERS...

Though tough and powerful, Blue Brute Air Tools are light and compact, with the easy handling that means more satisfied workers . . . more work done . . . more profit for you.

Paving Breaker, WB-50 | Rock Drill, WJ-45 | Clay Digger, W-19 | Backfill Tamper, W-8

BUY BLUE BRUTES

Worthington Pump and Machinery Corporation, Construction Equipment Department, Harrison, N. J.

WORTHINGTON

Distributors in all principal cities.

H8-2

IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB

Wisconsin Block Producers Meet

Annual Convention in Milwaukee considers quality of product and new methods of marketing

Newly elected officers of the Wisconsin Concrete Products Association, left to right: William Schneider, Best Block Co., Milwaukee, treasurer and director; Harry Sorenson, Waylite Concrete Masonry Co., Racine, second vice-president and director; William Siegert, Economy Block Co., Wauwatosa, president; Emil Fehr, Fehr Concrete Products Co., Eau Claire, director; and A. W. Devos, Devos Block Co., Milwaukee, secretary

APPROXIMATELY 200 concrete products manufacturers from all over Wisconsin assembled in Milwaukee for the 29th annual convention of the Wisconsin Concrete Products Association held January 20-21 at the Hotel Pfister. This association is one of the oldest and most vigorous state organizations of block producers in the country.

In welcoming the members of the association and their guests to the convention, William Siegert, president, Economy Block Co., Milwaukee, stressed the need for a stronger and more active state association. He said that today's biggest problem in the concrete masonry industry is the maintenance of the newly-gained markets for the product, which markets have been gained due to scarcity of competing materials during the war. He declared that the best way to maintain these markets is by continuing to improve the quality of the product, and to institute a vigorous advertising, promotion and selling campaign.

Following M. Siegert's presentation, there was considerable discussion of an advertising and promotion campaign to be executed by the association—but the consensus seemed to be that the time was not ripe for such an undertaking until more managers of individual plants have been sold on the idea of doing it themselves.

Secretary's Report

In giving the secretary's report, Art Devos, Devos Block Co., Milwaukee, described the exhibit that the Association erected at the Wisconsin State Fair Grounds in Milwaukee during the Wisconsin Centennial in August of 1948. This exhibit consisted of a cut-away section of a full-size modern dairy barn, built of concrete masonry, and large enough for five cows. A full-size concrete masonry milkhouse was also erected adjacent to the barn, and both structures were in actual operation all during the month. This project, Mr. Devos stated, was probably the largest ever undertaken by the Association, but he felt that the good it did to the industry was sufficient to warrant its cost. William Roper, farm specialist for the Portland Cement Association, spoke extemporaneously in this connection, and stated that there was every likelihood that this exhibit would be continued as a permanent one and would be open for inspection during the State Fair Week down through the years.

E. W. Dienhart, executive secretary of the National Concrete Masonry Association, discussed the activities of the Association during the past year. He pointed out that the industry was continuing to progress, and told how necessary it was that there be an association to do many things that manufacturers could not do as individuals.

The first day's program also included a talk by Richard Perrin, director of the Milwaukee Housing Authority, who asserted that present and future needs for public housing should not be considered on a basis which disregarded certain religious or economic classes. Mr. Perrin pointed out that the gap between present day income and cost of shelter was greater than it was even in 1934.

Following Mr. Perrin, Roland Teske, president of the Milwaukee Builders Association, vigorously attacked the federal government's 40-year public housing plan, citing the squeeze being put on the builder by public housing on the one hand and cheap types of construction on the other.

The second morning was devoted to an inspection trip through the Engineering Building at Marquette University, which included examination of the laboratories where many tests on concrete masonry units are conducted. Professor O. Neil Olson conducted the tour and explained all the details of the various tests, pointing out the importance of periodic testing in order that the manufacturer can be certain his product continually meets specific requirements.

The afternoon meeting was opened by Eugene O. Goeb, housing engineer for the Portland Cement Association, who traced the progress of the industry from its inception in 1899 up to the present time. Starting out as a "back yard" industry, block manufacture continued practically as such, Goeb stated, until the early 1920's. He pointed out that steps in the development of the industry were made hand in hand with improvements in the quality of units produced. He said that to assure future growth as the quality is improved and a better unit is made, the manufacturers must be sure that the public is kept informed.

Following Goeb's remarks, R. E. Copeland, director of engineering, National Concrete Masonry Association, defined "Quality" as applied to various types of work, illustrating that a unit suitable for one use might not be suitable for another. Mr. Copeland told of the various research projects that the Association was participating in, and concluded that there were four items necessary for continuing prosperity in the industry: 1) reduced costs of manufacture; 2) increased sales; 3) development of new markets; and 4) continued improvement of quality.

Durability of Block

Robert Burmeister, engineer, Milwaukee City Testing Laboratory, confined his remarks principally to the need for making a unit which was durable. He urged the manufacturers to ask themselves the question, "How long will the unit last." Mr. Burmeister felt that concrete masonry units should be built to last at least 100 years, and during that time should be completely resistant to the elements, such as fire, sun, wind, rain, freezing and thawing.

An interesting talk was given by William Manly, real estate editor for

(Continued on page 154)

Concrete Industries exhibit held in conjunction with the 29th annual convention of the National Concrete Masonry Association

Merchandising Featured by N.C.M.A.

Largest machinery exposition held in connection with convention of concrete masonry manufacturers. Meetings also considered new products, efficiency in production and quality standards

THE TWENTY-NINTH ANNUAL CONVENTION of the National Concrete Masonry Association, held concurrently with the concrete industries exposition, January 31—Feruary 3, was probably the most successful meeting of the industry ever held. Attendance was in excess of 3600, with representation from more than 40 States and territorial possessions, which far exceeded registration figures for any convention held strictly for concrete masonry producers.

One of the key attractions was the exposition of new machinery, equipment and supplies which far exceeded any previous exhibit for the industry in interest shown, new developments to be publicly presented for the first time and actual return to the exhibitors. All general sessions of the convention were held in the Musical Hall of Cleveland's public auditorium, which furnished the best facilities anywhere for machinery display, in the public auditorium itself.

This was a four day convention with minimum conflict between the convention sessions and the hours open for the exposition. All general sessions were held in the mornings and the exposition was opened each afternoon, the only conflicts being mid-afternoon sessions to consider problems associated with the use of the various special aggregates. These separate meetings considered cinder, Haydite, Enslite (slag), pumice, Celocrete, Waylite and Superock aggregates, their use, and properties of concrete masonry units made from them.

Subjects considered during the general sessions were well planned to suit the times and business conditions in the years ahead. Merchandising was stressed throughout the program either directly or indirectly, in recognition of the fact that that phase of activity has been neglected by many producers during the seller's market period now approaching an end, and in recognition also of the fact that a number of concrete masonry producers have not experienced times during which they have had to sell their products.

One entire session considered planned programs of merchandising for the small, medium-sized and large cities and areas, with papers presented

(Continued on page 138)

Exhibit Views

(1) **Blaw-Knox Co.**, Pittsburgh, Penn., featured a working scale model of a drum-type concrete delivery truck, with a backdrop of enlarged photographs of concrete plants using company equipment. (2) **Kwik-Mix Division**, Koehring Co., Milwaukee, Wis., displayed for the first time the Moto-Bug, a self-powered wheelbarrow with the added feature of a step on which the operator can ride. (3) **Towmotor Corp.**, Cleveland, Ohio, held this demonstration on the stage of the auditorium and also had a booth containing an identical machine, both equipped with Schmidgall mechanical side-gripper forks for block handling in cubes. (4) **The Daybrook Hydraulic Corp.**, Bowling Green, Ohio, displayed its new 4-cu. yd. non-agitating Hi-N-Lo concrete delivery body, featuring a high discharge point and mounted on an International tandem-axle truck. (5) **Besser Manufacturing Co.**, Alpena, Mich., center, showed a working scale model block plant, complete from aggregate delivery to curing rooms. Also displayed, for the first time, were the new Acrow centers, a system for placing soffit block floors and roofs without the usual shoring. The new center is a steel beam with extendable ends that rest on top of the building foundations or walls; left, **Service Caster & Truck Corp.**, Albion, Mich., presented a working demonstration of a fork truck on the stage as well as exhibiting a similar model in the booth. This model, a Motolift, was shown for the first time, and incorporated the company's air-expanded gripper forks for cube handling; and right rear, **Hercules Steel Products Co.**, Galion, Ohio, exhibited the latest model of the company's line of non-agitating concrete delivery bodies, featuring a discharge angle indicator to show the operator the proper point to open the tail-gate for any particular load or job. The latest bodies also feature bottom and lower side insulation as an aid in preventing segregation in freezing or extremely hot weather. Also displayed in the booth was a working scale model made of glass for complete visibility of all working parts. (6) **The Flexicore Co., Inc.**, Dayton, Ohio, showed panels of buildings constructed with Flexicore units and had a typical cross section of a Flexicore slab on a table in the booth. (7) **Standard Dry Wall Products, Inc.**, New Eagle, Penn., demonstrated the waterproofing ability of its product by directing a stream of water against a block wall painted with the company's product. (8) **R. S. Reed Corp.**, Three Rivers, Mich., displayed a Vi-Brik-Crete concrete brick machine, as well as a concrete mixer and hand trucks for block transfer.

1

5

KWIK-MIX
JOHNSON
PLANTS
2

6

3

7

STAMPING
DAYBRICK
AIR ENTRAINED CONCRETE BRICK
4

8

No. 1, above, Gilbert E. Olson, Builder's Supply Corp., Phoenix, Ariz., operator of one of the biggest concrete masonry plants in the U. S.; No. 2, R. E. Copeland, director of engineering, N.C.M.A., drives home a point in a discussion on the exhibit floor; No. 3, Harry Emerson, Lehigh Portland Cement Co., Allentown, Penn., talks with Miss Margaret Smith, secretary-treasurer, Central Rock Co., Lexington, Ky., and an officer of Lexington Concrete Products Co.; No. 4, Claude Clark, representing the Ohio Ready Mixed Concrete Association and the Ohio Sand & Gravel Association, Columbus, Ohio, takes time out from touring of the exhibits to sit in the ROCK PRODUCTS booth; No. 5, Mr. and Mrs. A. E. Lloyd, Alabama Cement Tile Co., Birmingham, Ala., pause to have their picture taken; and No. 6, W. C. Smith, Cookesville, Ltd., Toronto, Canada, relaxing after a hard day on the exhibition floor

by leading merchandising experts from the industry in each category. That session had Otto Buehner, Buehner Cinder Block Co., Salt Lake City, Utah, as chairman and W. D. M. Allan, director of promotion, Portland Cement Association, as moderator.

A second general session, under the chairmanship of Horace W. Bush, Multiplex Concrete Co., Inc., East Orange, N. J. considered large potential markets for concrete masonry producers in the form of prestressed-concrete masonry walls, floors, and roofs; the promotion of concrete joist-concrete filler block floors; and featured a panel discussion on ways and means of obtaining greater production from existing plant facilities. This is an important consideration in avoiding over-expansion and in making it possible to maintain and extend marketing areas geographically in competitive selling.

A third session, presided over by Jay C. Ehle, Cleveland Builders Supply Co., Cleveland, Ohio, featured a combination of merchandising through demonstration houses of concrete masonry and moving pictures; and plant operating refinements such as instrumentation, effective lighting and laboratory control. President George W. Katterjohn presided for the opening session at which the business affairs of the association were transacted.

Officers and Directors

Harold L. Spaight, Cedar Rapids Block Co., Cedar Rapids, Iowa, secretary-treasurer of the association in 1948, was elected president to succeed George W. Katterjohn. Mr. Spaight has been active in association activities for many years, recently as head of the publicity committee, and has been in the concrete masonry industry 21 years. In accepting the presidency, Mr. Spaight emphasized that, in the year ahead, the industry must concentrate on merchandising and adhere to quality products if its leadership in the building industry is to be maintained in a buyer's market. Carol Strohm, National Breeko Block, Nashville, Tenn., is secretary-treasurer.

A motion was passed to elect three directors, each to serve for five years, in preference to election of five to serve for three years because it is believed that a longer term of office will be beneficial in the acquiring of experience in running the affairs of the association. The three newly-elected members of the board of directors are Lewis Lloyd, Alatex Concrete Products Co., New Orleans, La.; Sam Pa-

(Continued on page 140)

Exhibit Views

(1) **Domine Automatic Machinery Corp.,** Rochester, N. Y., left, featured a slide projection box showing scenes in typical block plants using the company's pallet handling machinery, and right, **Coast Metals, Inc.,** Canton, Ohio, had actual examples of machine parts familiar to the concrete plant owner that had been hard surfaced to resist wear. (2) **Fleming Manufacturing Co.,** St. Louis, Mo., had both a single and a double block machine on exhibit, plus a concrete mixer. The company handles complete block plant machinery. (3) **Santa Fe Pumice Co., Inc.,** Santa Fe, N. M., exhibited typical lightweight block produced with pumice aggregate, plus samples of various grades of the aggregate. (4) **Pumice Producers Association,** Albuquerque, N. M., offered information concerning use of pumice as an aggregate in concrete products plants. (5) **Basalt Rock Co.,** Napa, Calif., exhibited examples of Strestcrete and Strestwall construction (for a complete account, see convention report). (6) **Reynolds Metals Co.,** Louisville, Ky., displayed a block building with an aluminum roof. The roof units are delivered as a packaged unit, 16 x 18 ft. or 24 x 24 ft. in size, with lengths variable in 6-ft. sections and all bolt holes pre-drilled. These roofs are offered only to the block plant owner and are to be retailed by him as a means of increasing his block sales. Advantages of these aluminum roofs complement those of block: fire-safety, vermin proof, high insulating qualities, etc. (7) **Ransome Machinery Co.,** Dunellen, N. J., exhibited a 3-cu. yd. drum-type mixer body featuring pressed steel plates supporting mixer blades; plus a pneumatic paving breaker, and a lightweight air-cooled engine. (8) **Yale & Towne Manufacturing Co.,** Philadelphia, Penn., featured an electric walking lift-truck carrying a block curing rack. Also shown were a platform scale and an exhibit of manual and electric hoists. **Universal Door Carrier, Inc.,** Indianapolis, Ind., exhibited a metal, insulated curing-room door complete with attachments to show the company's system for door handling.

LEAST WEAR
LAVE REPAIR

5

FLEMING MANUFACTURING CO.
2

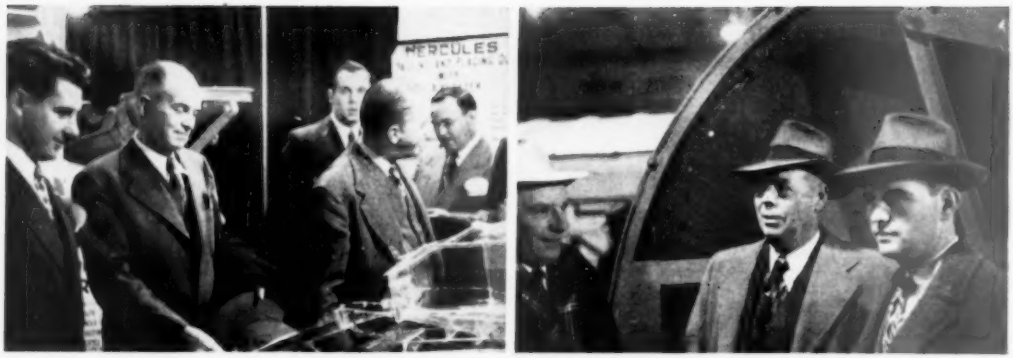
6

CANDLE PUMICE CO. INC.
THERE A DIFFERENCE IN PUMICE

CONCRETE
1

PUMICE PRODUCERS ASSOCIATION
4

YALE & TOWNE MANUFACTURING CO.
YALE
YALE
8



Roy N. McCandless, San Antonio, Texas, manipulates a working scale model of a non-agitating type concrete delivery truck; and left to right in the picture to the right are three Westerners: G. F. Steigerwalt, San Rafael; E. H. Judd, San Carlos; and William Grindle, Selma. All three "Westerners" are from California

turzo, V. Paturzo Bros. and Son, Baltimore, Md.; and Herbert Geist, The Geist Coal and Supply Co., Cleveland, Ohio.

Mrs. C. E. Ehle, widow of past-president Clarence Ehle, Cleveland Builders Supply Co., was chairman of the ladies' entertainment committee which arranged for a reception and tea, a sightseeing trip through the city and a fashion show held in one of the downtown department stores. The annual banquet, held at the Carter hotel, was attended by over 700 people.

Manufacturer's Exposition

There were over 70 exhibitors of machinery, equipment and supplies of every description for the concrete masonry unit manufacturer, and the various displays exhibited far more than the usual numbers of new machinery and improvements developed over a two-year period. Custom is to hold expositions every two years in the future. Photographs of the exhibits are shown herewith and brief descriptions of the outstanding new developments accompany this report.

Hubert Moors, left, being presented with Noble Award by Henry Buchholz

Noble Award

Henry Buchholz, Illinois Brick Co., Chicago, presented the Thomas W. Noble award, which carries with it a $500 cash prize, to Hubert Moors of the William Moors Concrete Products Co., Fraser, Mich. The Noble award committee is comprised of the past presidents of the association and the award is made for the most valuable contribution during the past year by a member of the association. There were 12 entrants in the competition and Mr. Moors was judged the winner for a development in block handling procedure that amounts to approximating straight-line production methods in the handling of units from the time they leave the block machine for all practical purposes. The system consists of mechanical handling of units from the time they are taken from the curing rooms until they are cubed.

Racks are taken from the curing room and spotted at the rear of the block machine. A second off-bearer at the rear of the block machine takes a pallet load of steamed concrete units from the rack, places the loaded pallet on a table and a chain conveyor returns the pallet to the magazine.

(Continued on page 142)

Exhibit Views

(1) **Erie Steel Construction Co.**, Erie, Penn., left, mounted large photographs on the backdrop of the booth showing actual job installations of the company's portable plants, etc., and right **Mortarless Tile Machine Co.**, Los Angeles, and **Frantz Pattern & Foundry Co.**, Long Beach, Calif., shared a booth. Special aluminum pallets are produced by the latter for the machines manufactured by the former. Block from this machine may be layed up in a wall without mortar, as they are inter-locking. (2) **Clipper Manufacturing Co.**, Kansas City, Mo., displayed the latest model of its line of masonry saws, plus interchangeable blades and a smaller model saw. Newest feature of the larger saw is a conveyor table that may be tilted and with a block clamp. (3) **Symons Clamp & Manufacturing Co.**, Chicago, Ill., showed in its booth a concrete wall form erected with special clamps that make for both speed and ease of erection and dismantling. (4) **Master Chrome Service, Inc.**, Cleveland, Ohio, displayed a typical mold box for an automatic block machine that has been chrome plated to expedite removal of block. (5) **The Kent Machine Co.**, Cuyahoga Falls, Ohio, left, exhibited several items of concrete block plant machinery, including a block machine, a continuous mixer and a lintel machine, plus the "Blockmatic," a system for block handling, and right, the display of **Concrete Transport Mixer Co.**, St. Louis, Mo., contained two models of the company's mixer trucks; a 2- and a 3-cu. yd. (6) **Builders Supply Corp.**, Phoenix, Ariz., and **Arthur Gehberger & Son**, Newark, N. J., shared a booth showing the "Tip-Top" trailer that tips down to automatically unload block. (7) **Schaefer's Estimating Tables**, Rochester, N. Y., left, had on display a complete line of mix proportion estimating tables and slide rules; center, **Cleveland Vibrator Co.**, Cleveland, Ohio, used a small model display and offered literature on the company's line of tools and vibrators; and right, **Bergen Machine & Tool Co., Inc.**, Nutley, N. J., had on display a pallet cleaning machine of high capacity. (8) **The Multiplex Concrete Machinery Co.**, Elmore, Ohio, displayed two sizes of block machines, a small utility mixer, a chimney-block machine and an air-operated vibrator to be attached to any automatic block machine. The larger machine has an 8 block per min. capacity, and is operated hydraulically with plain or cored pallets.

MORTARLESS
RADIANT
NEW PROFIT OPPORTUNITY
Frantz

1

ANNOUNCING
BLOCK

5

2

TIP TOP
MILLER SUPPLY CORP.
Phoenix Ariz.

6

3

CLEVELAND

4

MULTIPLEX

8

Harold L. Speight, Cedar Rapids Block Co., Cedar Rapids, Iowa, newly elected president of the N.C.M.A.

A retractable arm pushes the units on to a chain conveyor, removes the fins and smooths the core faces of the units. Another retractable arm then pushes the units on to another roller conveyor at right angles to the first one, taking them to an enclosed cubing area next to the machine room. There, an air-operated lifting device picks up enough block at a time to make half a tier in a cube, depositing them on a skid on which the units are cubed. A great amount of savings, up to 25 per cent, is claimed for the system, which will be built and sold, through contract, by the Kent Machine Co., manufacturer of concrete products machinery.

President's Address

George W. Katterjohn, president of the National Concrete Masonry Association, in his address opening the 29th annual convention, predicted that the year 1949 will be another banner year provided that quality products, efficient production and wise sales promotion be coordinated to do the job. He thanked the other officers and members of the board of directors and the association for their outstanding cooperation during his term of office.

Mr. Katterjohn had been an extremely active ambassador for the industry and association during 1948, having traveled some 23,000 miles through 23 states in the interests of the industry.

Mr. Katterjohn traveled, at times in the company of Executive Secretary E. W. Dienhart, Director of Engineering R. E. Copel and, various of the directors and past presidents. He expressed surprise at the changed conditions in the industry throughout various areas. Particularly interesting to him were the influence of climate on methods, the types of merchandising in use between areas, the selection of aggregates and the types of plants and producers. Upon completion of his travels, he was more firmly convinced than ever that the industry had become well entrenched. Twenty-five new members were added to the association as a direct result of his travels.

Mr. Katterjohn concluded by itemizing some recommendations and predictions. He recommended (1) that producers get their businesses in a solvent condition without over-expansion, (2) cooperation between competitors on quality, and avoidance of price cutting, (3) that prices be held reasonable through increased efficiency, volume production and sales effort, (4) that plants be cleaned up, (5) that personalized selling be instituted and homes (producer's) and offices be made merchandising devices and (6) that the industry work to see to it that their products be laid up properly on the job.

He predicted that surprising developments in manufacturing methods will be made available to the industry. He believes that business failures in the industry will increase considerably in 1949 and that there will be a great increase in credit accounts that will bear watching. He predicted that cement will again be short in supply by mid-summer, that changing the basing point ruling in the cement industry will be difficult of attainment, and that production of the industry will again be heavy in 1949. He believes that light classifications of construction will be down in volume but that an upturn in heavy construction will offset that loss. His final prediction was that much more effort will be needed to secure and hold business in 1949 and particularly by those in the industry who have not yet experienced competition selling.

Executive Secretary's Report

Executive Secretary E. W. Dienhart, in his annual report, commented on the growth of the industry and the association and paid tribute to retiring president George W. Katterjohn for the time and effort he had expended in the interest of the Association, much of it at his own personal expense. Mr. Dienhart was pleased at the attendance and reported that all but one member of the board of directors, which numbers 15 and 10 past presidents ex-officio, were present.

His report largely covered accomplishments of the association in the field of promotion, modular size coordination, and in federal and legislative matters. Among the promotional material obtained and widely distributed are the "Concrete Masonry Pictorial"; the booklet "Facts about Concrete Masonry" published jointly with the Portland Cement Association, of which one-quarter million copies have been distributed; the "House Plan Service," and "Design Data on Concrete Joist Filler Block Floors." The latter publication will be followed with a promotional booklet for use by the membership in developing this tremendous market for concrete units.

In commenting on modular coordination sizes, which the association has been promoting along with other organizations, Mr. Dienhart pointed to a tremendous savings in materials that has resulted from reducing unit dimension by $\frac{1}{8}$ in.

(Continued on page 144)

Exhibit Views

(1) **Oswalt Engineering Service Corp.**, Forest Park, Ill., exhibited a vibrator assembly for attachment to an automatic block machine. (2) **The Commercial Shearing and Stamping Co.**, Youngstown, Ohio, left, displayed a complete line of cored steel pallets and a representative line of manual and motor-driven hydraulic pumps, valves and cylinders; and **Jackson & Church Co.**, Saginaw, Mich., right, featured a concrete brick making machine. (3) **Solvay Sales Division**, Allied Chemical and Dye Corp., New York, N. Y., offered literature, and booth attendants discussed problems with users and prospective users of the additive. (4) **Art Stone Inc.**, Canton, Ohio, displayed an attractive fireplace employing the company's product, left, and right, **Celocrete Division**, The Celotex Corp., Chicago, Ill., pictured completed homes on the backdrop of the booth and displayed concrete block units on a table in front. (5) **Berg Vault Co.**, St. Louis, Mo., displayed a finished concrete burial vault plus literature on the company's products. (6) **Chicago Pneumatic Tool Co.**, New York, N. Y., left, showed a representative line of paving breakers, etc., and **Cedar Rapids Block Co.**, Cedar Rapids, Iowa, displayed part of a block wall layed up with the company's reinforcing, samples of which were mounted on the backdrop. (7) **Barrett-Cravens Co.**, Chicago, Ill., featured a model of the company's line of electric walk lift-trucks with a loaded kiln rack of block. (8) **Dumpcrete Division**, Maxon Construction Co., Inc., Dayton, Ohio, had a model non-agitating concrete delivery body in front of a backdrop featuring enlarged photos of the bodies in service on construction jobs. (9) **Concrete Machinery Co.**, Hickory, N. C., showed an automatic concrete drain tile machine plus samples of lawn furniture cast from the company's line of molds. (10) **Medusa Portland Cement Co.**, Cleveland, Ohio, left, offered literature in a booth, the backdrop of which featured paper bags representing the company's complete line of cements, and right, **Truck-Man, Inc.**, Jackson, Mich., showed its latest model lift truck, powered by an air-cooled motor and featuring a newly designed, simple, lifting mechanism.

OSWALT
FORGINGS
SOLVAY
CALCIUM
CHLORIDE
CONCRETE MACHINERY COMPANY
Inckman
1
2
3
4
5
6
8
9
10

Merchandising Concrete Masonry

IN A GENERAL SESSION especially for consideration of merchandising and promotion of concrete masonry, three speakers discussed successful methods used in small, medium and large-sized sales areas, respectively.

In opening the session, chairman Otto Buehner stressed the need for planned merchandising in order to protect the industry's position. He urged that markets be analyzed and that block manufacturers work closely with all agencies that have influence in purchasing building materials and use all the selling tools available. He recommended working very closely with the Portland Cement Association in sales promotion efforts.

Mr. Buehner then introduced W. D. M. Allan, director of promotion, Portland Cement Association, who expressed great enthusiasm in the great progress of the industry. He pounded home the fact that the concrete masonry industry is a "selling industry" and that it had been working on the wrong premise in investing 90 percent of its thought and money in production effort. The industry had better give more attention to marketing problems, he emphatically urged.

E. E. Osborn, The Clinton Construction Co., Wilmington, Ohio, in his presentation, "The Merchandising Program of a Company Located in a Small City," pointed to some sales promotion ideas of very practical value and which could be used by many companies in the business. His company has been in the industry only about one year but is building its business around sound merchandising principles.

There are 27,000 people in Clinton county and 5000 in the city of Wilmington which has only a few industries. Sales are made direct within a ten mile radius of the plant and distributors are employed outside that area in southwestern Ohio. The plant has bulk cement facilities, and limestone aggregates are used. Advertising is placed in the Wilmington News Journal.

Extensive use is made of literature and illustrated folders. Distribution is being made in 16 counties and prices are established on a township basis. Distributors are provided illustrated books covering the plant in detail and these books are published at considerable expense. Mats of standard advertisements are provided the distributors which permit insertion of their own company names. Promotional literature available from the Portland Cement Association and the National Concrete Masonry Association are given wide use. One of the N.C.M.A. house plans is featured every Sunday in the women's section of the local newspaper as the "Home of the Week" in column advertisements measuring 16 in. deep. Another series of advertisements featured "Concrete Block Homes of Distinction."

Advantage is taken of the county fairs to exhibit actual structures laid up with every type of unit manufactured and to exhibit the various types of waterproofing handled. Technical aids such as blueprints for use in laying up lintels and sills are made available. In conclusion, Mr. Osborn expressed appreciation for the help he has had from N.C.M.A., P.C.A. and other organizations.

"Our Approach to Opening a Market for Concrete Masonry Units in a Medium Sized City" was the title of a talk by R. L. Humbarger, Masolite Div., General Dredging Co., Fort Wayne, Ind. In his opening remarks, Mr. Humbarger said that the industry has the choice to now entrench itself as the manufacturer of the No. 1 structural building material or coast along and lose out.

He suggested that the two things needed by the industry are the development and manufacture of new products, and promotion, in which he includes advertising, demonstrations and straight selling. His company started the manufacture of concrete masonry units 18 months ago in a city that had never had a good plant and where there were no concrete homes. At first, the public looked upon the concrete masonry unit as a cheap substitute. Merchandising was started through dealers and 60 have been established within a 60 mile radius.

When the plant was started, the company held an open house and bolstered its inaugural with full page newspaper advertisements. A 7 a.m. news broadcast is sponsored over the radio to reach the farm trade. In 1948, the company sold 1,200,000 8-in. equivalent units. Mr. Humbarger has found N.C.M.A.'s publication, the "Pictorial," valuable in sales work.

In April, 1948, a demonstration home was built, which was called the "Masolite Demonstration Home." Full page advertisements announced the opening, 5000 people inspected the house in one week and, as a result, 35 houses were built in 1948.

Fred W. Reinhold, Anchor Concrete Products, Inc., Buffalo, N. Y., in his talk "A Detailed Outline of a Planned Merchandising Program" told of some

(Continued on page 146)

Exhibit Views

(1) **Stearns Manufacturing Co., Inc.**, Adrian, Mich., featured in its booth the model 16 block machine, and also a separate vibrator unit plus literature. (2) **The W. T. Walsh Equipment Co.**, Cleveland, Ohio, displayed a masonry saw, self-powered wheelbarrow, and other equipment handled by the company that pertained to the concrete products field. (3) **Anchor Concrete Products, Inc.**, Buffalo, N. Y., displayed seven model homes of concrete block construction, complete with cut-away versions and landscaping. (4) **The White Motor Co.**, Cleveland, Ohio, displayed a model WC-2264 truck mounted with a 4½-cu. yd. Rex mixer body, painted the distinctive yellow of Cleveland Builders Co. The unit was to be delivered after the show. This company also supplied the flat-bed truck used on the stage for the block cubing demonstration. (5) **Clinton Machine Co.**, Clinton, Mich., left, displayed representative models of the firm's complete line of air-cooled engines, ranging from 1½ to 3 hp., and right, **Heltzel Steel Form & Iron Co.**, Warren, Ohio, featured a working scale model batching plant, plus enlarged photographs of installations of company equipment. (6) **The Master Builders Co.**, Cleveland, Ohio, had sample block in the booth that had been made with Pozzolith, the dispersing agent, and literature on the various company services. (7) **F. C. George Machine Co.** Orlando, Fla., exhibited the company's new "400" series, a block machine with capacity of 3800 block per day. This machine uses both hydraulic and mechanical principles of operation. Right: **Sparkle-Crete Co.**, Chicago, Ill., displayed samples of aggregate that add a sparkling face to block for exposed masonry construction. Also in the booth were sample block made with the aggregate. (8) **Jaeger Machine Co.**, Columbus, Ohio, featured a 3-cu. yd. high-dump mixer body, plus a 60 c.f.m. stationary compressor, a ½-bag non-tilting concrete mixer and a 1½-in. pump powered by an air-cooled engine and weighing 55 lb. (9) **J. W. Appley & Son, Inc.**, St. Petersburg, Fla., showed a semi-automatic machine for producing the Norris Self-O-Line concrete block. (The **Norris Co.**, Norristown, Penn., shared the booth). A fully automatic machine is now being manufactured that will produce this special block. (10) **The Gene Olson Corp.**, Adrian, Mich., had on display for the first time its line of new hydraulically operated block machines. The model displayed, the Gocorp King, has a capacity of 24 8-in. equivalent block per minute. Also displayed in this booth were a continuous mixer, a strength testing machine for concrete block and cylinders, a relineable mold box for the Stearns Joltcrete block machine and drain tile manufactured on the Gocorp drain tile machine. (11) **Thermal Engineering Co., Inc.**, Detroit, Mich., left, displayed a large insulated metal door for closing curing rooms, and two flexible-shaft rotary chipping machines that the company handles, and right, **Consolidated Form Co.**, Mt. Vernon, N. Y., displayed examples of its easily erected concrete forms.

1

7

2

3

8

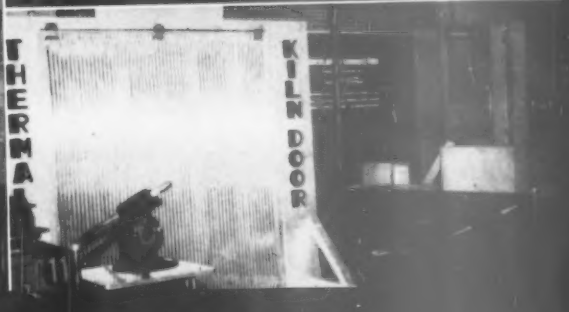
4

9

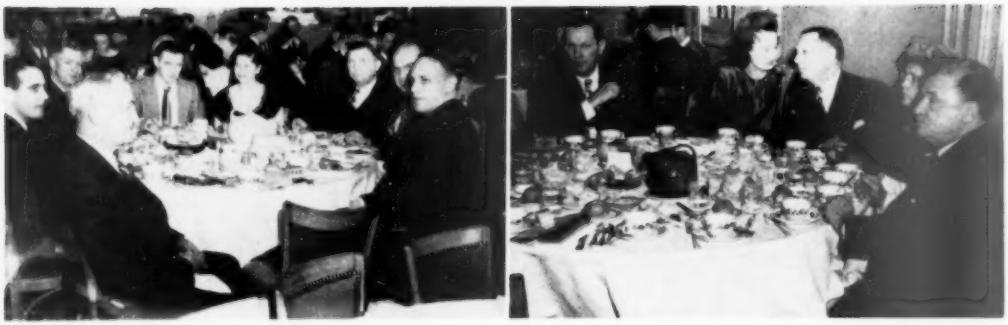
5

10

6



11



Two tables at the Annual Banquet, at which there was no head or speaker's table. Left above, in clockwise rotation: Ray C. Kiser and H. P. Clegg, Jr., Crume Brick Co., Dayton, Ohio; Ralph J. Dalbey (hidden behind Mr. Clegg) and Alden B. McGuire, Comac Builder's Supply Corp., Rochester, N. Y.; Elmer Reinhold, Anchor Concrete Products Co., Buffalo, N. Y. and his guest, Miss Audrey Hagner, Buffalo, N. Y.; A. V. Johnson, and Earl W. Peterson, Ideal Cement Stone Co., Omaha, Neb.; and D. D. Bryan, Besser Manufacturing Co., Alpena, Mich. Left to right in picture to right: Ernest Maier, Ernest Maier, Inc., Bladensburg, Md.; Mrs. and Mr. L. H. Bennett, The Bennett Concrete Stone Co., Cleveland, Ohio; Mrs. and Mr. H. J. Harley, Lehigh Building Block Co, Allentown, Pa.

of the activities of a concern that has been one of the most active merchandisers in the industry. Mr. Reinhold has given a great deal of thought to market development and has even proved that there is a good farm market around Buffalo.

He started his own company in 1936, after 16 years in the industry. Buffalo had always favored lumber and for many years concrete masonry construction had been relegated to below grade use only. To get concrete units "out of the basement" class, a program of promotion was started built around the demonstration home.

Mr. Reinhold believes it important to belong to and be active in local clubs and civic organizations, and personally belongs to 16 organizations in Buffalo. In 1948, he sold 4,980,300 units and spent $17,107.07 for advertising. In 1949 he anticipates a volume of six million units and expects to spend $22,000 in advertising and promotion or an increase of 30 percent. Exhibits have played an important part in merchandising. One is the section of a concrete home in co-operation with another manufacturer that has been on display in a Buffalo bank for four years. The company also exhibits exposed wall construction at the New York State Association of Architects conventions and, at the Better Homes Show, exhibited five scale models from plans by five leading architects. Much of the advertising is in the New York State Empire magazine where full page advertisements are run regularly co-operatively by 22 manufacturers.

Labor Relations

The Labor-Relations Management Act (Taft-Hartley), the Wage-Hour Law and the Lodge-McMahon bill were the principal labor legislation discussed by V. P. Ahearn, executive secretary, National Ready Mixed Concrete Association, in an address, "Labor Relations — Our Problem and Yours."

The Lodge-McMahon bill would, if enacted, require all contractors with the federal government, having contracts totalling $10,000 or more, to guarantee a 30-hr. week for 40 weeks a year.

Interpretations of the Wage-Hour law, he said, make it appear as if no company fails to be subject to its provisions whether engaged in interstate or intrastate commerce. The tendency is to broaden the law's coverage to activities that merely contribute to national coverage.

Child labor laws will raise the minimum working age for children from 16 to 18 years for hazardous operations. Minimum wages will be raised to 75c per hr. and, by committee action, provisions will permit raising them to $1 per hr. according to Mr. Ahearn. In commenting on overtime regulations (Bay Ridge case), Mr. Ahearn suggested that a company's work week be made to start on Monday.

In speaking of possible changes in the Taft-Hartley Law, Mr. Ahearn said that President Truman is seeking compulsory arbitration which would no longer be arbitration and, he said, would likely lead to state socialism. He enumerated the various changes sought, to the disadvantage of the employer, which he said would constitute a big victory for the CIO since the law would contain everything that union wanted in its provisions.

(Continued on page 148)

Exhibit Views

(1) **The Dow Chemical Co.**, Midland, Mich., exhibited an air-entrainment meter made of magnesium for lighter-weight, as well as a hood of the same material, and literature on the company's line of pallets and other equipment for the industry. (2) **American Sta-Uri Co.**, Brentwood, Mich., featured a large tub filled with water and constructed of concrete block, painted with the firm's waterproofing paint. A constant stream of water ran into the tub over a concrete slab similarly treated. (3) **Mason's Twig Sales Co., Inc.**, Kansas City, Mo., displayed a metal clip for holding a mason's line in place when laying a block wall; and on which can be imprinted the name of the local block company or contractor. (4) **Erickson Special Equipment Manufacturing Co.**, Minneapolis, Minn., showed actual working pictures on the backdrop and easels of the firm's lift trucks "on the job." (5) **Industrial Development Co.**, Providence, R. I., displayed a pallet return to be added to any automatic block machine, and which transfers the pallets from the front to the back of the machine. (6) **Pumma-Stone Corp.**, Detroit, Mich., offered literature and information on the company's lightweight aggregate made from pumice, and right, **Gramm Trailer Corp.**, Delphos, Ohio, featured a working scale model of the firm's line of aerated trailers for hauling bulk materials such as cement. These trailers are built with capacities up to 125 bbl. (7) **Chain Belt Co.**, Milwaukee, Wis., displayed a 3-cu. yd. drum-type mixer body featuring high-discharge. The drum is powered by a 6-cylinder Chrysler industrial engine and mounted on an International KB-8 6-wheel truck. (8) **The Lith-I-Bar Co.**, Holland, Mich., showed both its model L-3 and L-5 block machines. The larger machine was shown here for the first time and has a capacity of 720 8-in. block equivalent per hr. Also shown was a continuous moving picture of the machines in operation in various concrete products plants over the nation. **Butler Bin Co.**, Waukesha, Wis. rear right, had in its booth an automatic slide projector showing bin installations in the concrete products field.

Magnesium
THE CONCRETE INDUSTRY

1

IBC
ONE OPERATION
DELIVERS & CLEANS

5

LASTING
ECONOMICAL

2

GHT AGGREGATE
OPTIONS
NOW
YOURS?

6

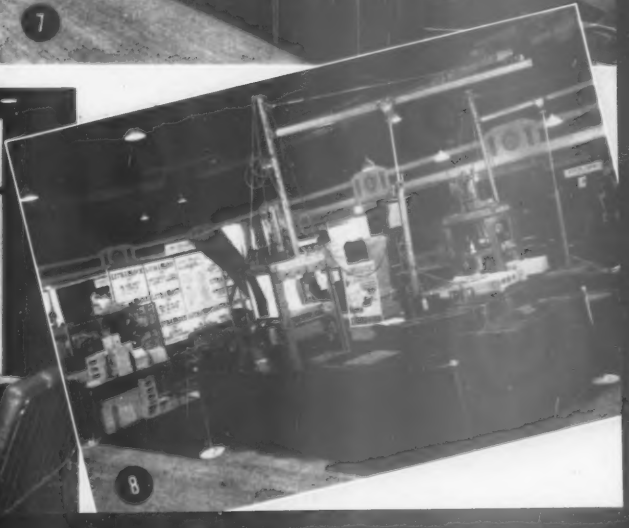
MASONS TRUCK SALES CO. INC.

CHAIN BELT CO.

7

Rugged
SIMPLICITY
World Wide
MARKET
Erickson
POWER LIFT
TRUCKS

4



8

Increasing Plant Production

VARIOUS METHODS that have been developed to increase block machine production and to increase plant efficiency were covered in a panel discussion meeting.

Ralph Reiner, Cleveland Builders Supply Co., Cleveland, Ohio, led off with a discussion "Increasing the Output of Block Machines and Collateral Equipment." He mentioned means employed to increase the speeds of block machines, lunch hour maintenance, etc. He said that the speeds of machines should be adaptable to the various types of aggregates in use. Many plants have been slowed down by slow mixing times, he said, in urging that the optimum mixing times be definitely determined as the key to maximum production.

He described the principle of the Oswalt dual vibration which consists of a mold box attachment which has two rotating shafts that permit quicker feeding into the mold box. Better compaction is also claimed for the device. According to Mr. Reiner, a block machine rated at 600 units per hr. can, with the Oswalt attachment, produce 900 units per hr. Thus a two-machine plant becomes, in effect, a three-machine plant.

Mr. Reiner also discussed the "electrovisor" developed by Cinder Block and Material Co., Indianapolis, Ind., which is an electronic device to control the time of squeeze in manufacturing concrete block. Uniform density and height of unit are said to be positively controlled through use of the device and machine speed is automatically controlled according to rate of feed. Both the Oswalt device and the "electrovisor" have been installed on machines in the industry.

The subject of a talk by N. C. Castroneva, Rockland Concrete Sales Co., Inc., Ridgefield, N. J., was "Achieving Higher Production Goals with Better Management and More Efficient Labor Utilization." Mr. Castroneva said that close contact with labor has been lost in many cases. He urged that companies clean up their shops and work rooms, and provide a relief period. Fifteen minute rest periods twice a day are provided by his company. Monthly labor meetings are held and ideas put forth by the workers are considered in these meetings.

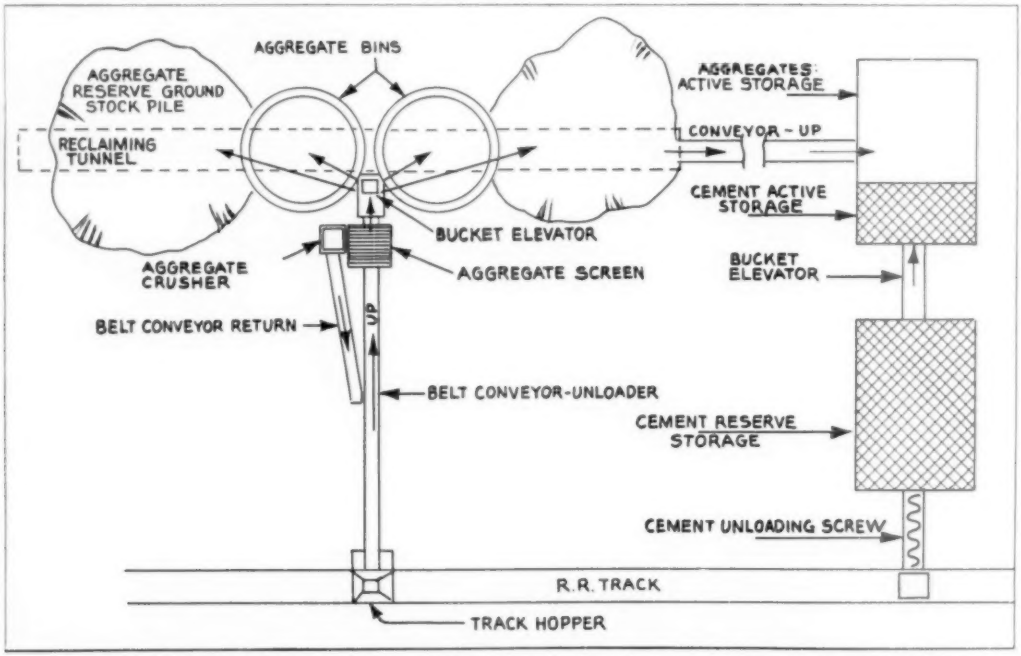
"Cushioning the Effects of Slow Delivery of Cement and Aggregates" was the subject of a talk by A. E. Lloyd, Alabama Cement Tile Co., Birmingham, Ala. Mr. Lloyd's company was established and the plant built right after the war at a time when shortages of cement and aggregates were becoming acute. Aggregate was in critical supply when the plant was ready to start production and the company set out to acquire raw cinders from all available sources in the area. A belt conveyor system was installed to stockpile cinders as discharged through a track hopper.

Later, a machine capable of converting molten blast furnace slag into a lightweight product was developed and a local steel company started to manufacture a product in sufficient quantity that much of it has been distributed to other companies. This product is cementicious in nature and therefore it is not desirable to stockpile it in large quantities so, as a reserve, cinders, which are improved by ageing in stockpile, were stored in quantities as great as 300 car loads at times. Bull-dozers are used to handle the stockpiles and for reclaiming to a tunnel conveyor.

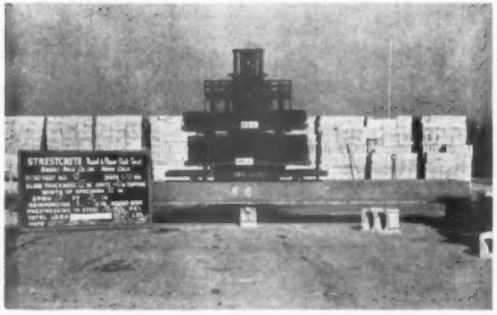
Cement shortages also were critical and the solution was found in taking advantage of those periods when the supply was most readily available. A sizable reserve cement silo, of reinforced concrete block walls, plastered and stuccoed, was built, with three compartments for the storage of normal cement, high early strength cement and a blending agent. Total available cement storage is 2000 bbl.

Similar facilities were provided at the company's affiliated company, Louisiana Concrete Products, Inc., Baton Rouge, La. Due to heavy rainfalls, covered aggregate storage tanks of 12 carloads capacity were built as a reserve to draw from when rains are unusually heavy.

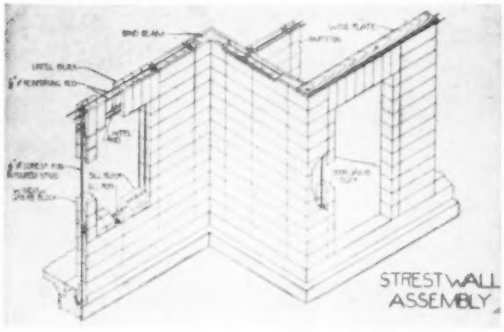
"Maintaining Equipment for Maximum Every Day Production," a paper by W. J. Oliver, Jr., read for him in his absence, summed up a number of operating tips. Frequent inspections are considered essential to ascertain when parts are needed and equipment

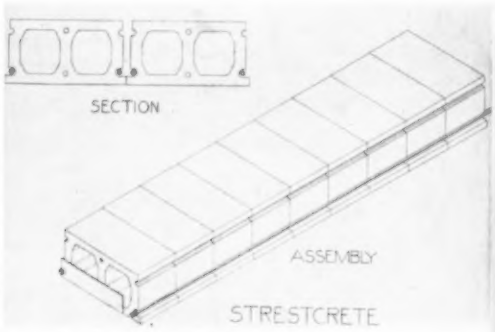


Aggregate and bulk cement storage facilities help maintain steady production of block plant in times of spotty material deliveries



Details of two shear tests on Strestcrete samples shown above: Left, slab thickness, 10 in.; Width, 32 in.; span, 17 ft. 3 in.; reinforcing, four ¾-in. round rods; prestressing, 16,400 p.s.i.; total load, 6150 lb. (200 lb. per sq. ft.); deflection, 0.540 in. Right, slab thickness, 4 in.; width, 32 in.; span, 7 ft. 10 in.; reinforcing, four ½-in. round rods; prestressing, 18,900 p.s.i.; total load, 5744 lb.; deflection, 0.510 in.





Tracing of detail of Strestwall assembly, left, and Strestcrete assembly, right

is in need of replacement. Replacement needs are detected so that replacements may be scheduled for down times. A rivalry has been set up among machine operators. Each man is responsible for having parts for his machinery available in stock. It has been important to know sources of replacement parts well in advance.

Conveyor belts and V-belts are checked frequently for tightness. It has been found that having all V-belts in a set completely matched results in ten times increased life. Bearings on equipment are checked regularly, safety rules are enforced and good housekeeping is the rule.

Subject for the next paper, presented by Paul M. Woodworth, The Waylite Co., Chicago, Ill., was: "Promoting Concrete Joist-Filler Block Floors." As an introduction to his subject, Mr. Woodworth made the statement that. "The square feet of floor area in commercial and residential buildings constructed in 1948 amounted to more area than the total area of all block wall construction." This was brought out to show the block producer that here was a field needing almost no new equipment over that which existed in the present block plant in order to exploit—and that large markets for concrete block manufacturers are available to expand the volume of the industry.

Due to the increase in lumber prices in recent years, soffit-tile filler block floor construction is competing with wood construction; and has the added advantages of fire-safety, insulation, added strength and resistance to termites, to mention a few. Slides showing details of soffit-tile floor construction were presented as part of this report.

Next speaker on the program, A. G. Streblow, Basalt Rock Co., Inc., Napa, Calif., continued the theme of block floors and roofs by presenting a system that his company had worked out for facilitating the construction of these units. Mr. Streblow's presentation was accompanied by slides of both wall construction and slabs undergoing shear tests, four of which are reproduced herewith. D. O. McCall, structural engineer for the Basalt Rock Co., Inc., aided Mr. Streblow in this presentation.

The system for prestressed reinforced concrete masonry walls, floors and roofs was worked out in order to overcome handicaps inherent in other forms of block slab construction resulting from excessive shoring expense and resultant delay to electricians, plumbers, etc. The concrete block used measures 16 in. long, 8 in. high and from 3 to 12 in. deep. This unit has two grooves on each end to position positive and negative steel, and can be produced on any of the present automatic block machines. These units have been marketed for over a year under the name of "Strestcrete" for floor and roof slabs and "Strestwall" for walls.

After curing in the usual manner, the units are passed through a precision double-wheel grinder to develop true and parallel surfaces of the top and bottom of the unit—the faces that meet in the finished slab. These block are now assembled on a flat makeup table, proper diameter threaded rods dropped into the grooves (see line drawing), end washers placed and the nuts tightened with a torque wrench to develop the predetermined stress in the rods—usually 40 percent of the yield.

A complete set of tests has been completed on these slabs in order to develop engineering data. For the tests 44 slabs were used that varied in length and were of the following depths: 4-, 6-, 8-, 10- and 12-in. Different steel loadings were used to obtain a complete set of shear tests. Duplicate tests were run on identical slabs with and without prestress in the rods, and in all cases no initial tension cracks showed at design load using prestressed slabs, which was not true of non-prestressed slabs.

For wall construction by this system an 8- x 8- x 24-in. unit in vertical

PRECISION VIBRATION WITH THE TOPDOG FORM VIBRATOR

Let us help you solve your problem in vibration. Write us for specific information as to your particular problem.

TOP DOG form vibrators available for 110 or 220 volt 3-phase, 60 cycle A.C.

FREE BOOKLET

Write for technical booklet giving information of profitable interest to everyone associated with concrete construction.

VIBRO-PLUS CORPORATION
243 West 55th St., N.Y.C.
Telephone: Plaza 7-0648

A FEW CHOICE TERRITORIES OPEN FOR DISTRIBUTORS

bond is used, stressing ceiling height vertical stacks between the footing and a steel washer in the top bond beam. All wall units are dried at the plant and dipped in a clear waterproofing solution, and because of this practice, cracking due to moisture in the wall is expected to be substantially reduced or totally eliminated.

After a section of wall is up and stressed, the stud between stacks is poured with a moderately high-slump concrete to waterproof the vertical joints. The top unit forms a bond beam with a bar of horizontal steel and poured at the same time the studs are poured.

To summarize the presentation, in the words of Mr. Streblow: "We believe this system will play an important part in the development of a new market for block producers for the following reasons: 1. Exact placement of steel reinforcing; 2. Full structural use of vertical and top webs in design is permitted by reason of the precision grinding—resulting in as much as 20 percent reduction in dead weight; 3. Prestressing of steel in multiple unit slab construction results in less deflection at design load and eliminates tension cracks at design load; and, 4. Provision for negative steel permits its use in cantilever construction.

Prestressed principles also have a real place in heavy construction, according to Mr. Streblow; who, with his company, visualizes large units stressed to the footings with added concrete poured in the large cells for heavy loading and with beams assembled by prestressing units. Units for this type of construction would have to be produced on larger pallets than present block machines provide.

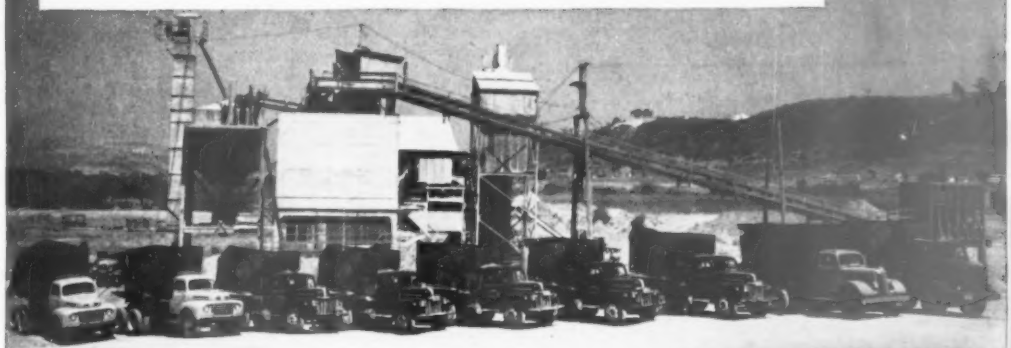
Horace W. Bush, vice president, Multiplex Concrete Co., Inc., East Orange, N. J., presided at the meeting which was opened with the annual report of R. E. Copeland, Director of Engineering, National Concrete Masonry Association. Mr. Copeland first touched on lightweight aggregates as regards the supply situation for the average concrete masonry manufacturer. He pointed out that plants for the produc-

(Continued on page 152)

Pictured on the exhibition floor, No. 1, above, J. C. Mironi, left, and Jack Streblow, both of Basalt Rock Co., Napa, Calif.; No. 2, E. K. Geist, The Geist Coal & Supply Co., Cleveland, Ohio, left, and Allan C. Miller, Cinder Block & Material Co., Indianapolis, Ind.; No. 3, Mr. and Mrs. J. Francis Boux, Supercrete, Ltd., St. Boniface, Manitoba, Canada, take time out from walking the exhibit floor to rest in the ROCK PRODUCTS booth; No. 4, left, Sam Paturzo, V. Paturzo, Brother and Son Co., a new director of the association from Baltimore, Md., and right, George H. Krier, Hallable Cinder Block Co., Brooklyn, N. Y.; No. 5, foreign visitors to the convention, P. J. Goossens, J. Van Den Heuvel, Belgium cement manufacturer, center, and David I. Walker, left, and J. S. Wheeler, right, both of J. S. Wheeler Enterprises, Ltd., Toronto, Canada; and No. 6, Joe Nagey, Columbia Concrete Products Co., Toledo, Ohio (with coat over arm), inspects a working-model block plant

"We Like Their High Discharge Speed And Low Maintenance Costs!"

D. B. CLARKE



The Fenton Fleet of Ransome Blue Brute Hi-Up Truck Mixers

Mr. D. B. Clarke, V. P. and Sales Manager of the H. G. Fenton Material Company, San Diego, Cal., writes in as follows:

"We purchased our first Ransome Hi-Up machine two years ago and have since added eight more. We have been well pleased with the performance of these mixers both from a standpoint of producing quality concrete and low maintenance costs, but particularly impressed with the speed that they discharge concrete with a slump as low as 1½ inches."

Note Mr. Clarke's last sentence about fast discharge with practically no slump. It means no time lost at the job, more hauls per day, and steady cost-cutting throughout the long life of every Ransome Blue Brute Hi-Up Truck Mixer.

In fact, speed is the keynote of Hi-Up performance—time- and money-saving speed based on the lasting efficiency of Blue Brute advanced design and construction. The non-jamming sealing door, quick-charging hopper and Ransome's famous mixing action shorten the time of every trip — while the trouble-free water system, easy accessibility of parts and strain-absorbing flexibility of design mean lowest possible maintenance costs and down-time.

You've read how H. G. Fenton Company's original purchase of two Ransome Hi-Ups was soon followed by expansion into a Hi-Up fleet. That's an old familiar story among Hi-Up users — and it will pay you to find out why. Get further proof that *there's more worth in a Blue Brute* from your Worthington-Ransome Distributor. Or write for Bulletin 221.

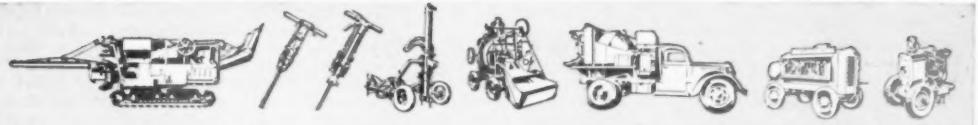
B9-3

WORTHINGTON

WORTHINGTON PUMP AND MACHINERY CORPORATION
Construction Equipment Department, Harrison, New Jersey
Distributors in all principal cities

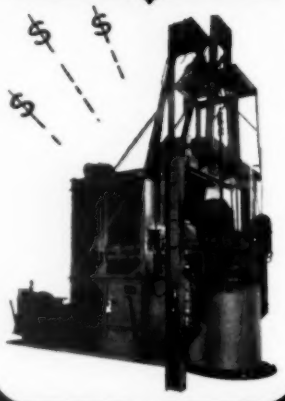
It's a battery of cost-cutters! Nine Blue Brute Hi-Up Truck Mixers owned by the H. G. Fenton Material Company, lined up at the firm's batching plant in San Diego, Cal. Machines are serviced by a Ransome 84S (3 yd.) Big Mixer. Fleet purchased through the Golden State Equipment Company, Los Angeles.

BUY BLUE BRUTES



IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB

MAKE
CONCRETE
PIPE
THE
Profitable
WAY



with
UNIVERSAL
Pipe-Making
MACHINES

We've been making pipe a quarter-century on our own machines. They're proved more profitable because: (1) they make more perfect pipe (2) they produce more pipe in fewer man-hours (3) they tamp 680 strokes per minute: use drier mix thus pipe needs less curing: handles with less damage. Write for details on Universal Pipe Machines, Mixers, Wire Bending Rolls, Wire Mesh Welders and other accessory equipment.

"It's better to own Universal Equipment . . . than to compete against it!"

UNIVERSAL CONCRETE MACHINERY CO.
297 South High Street Columbus, Ohio

N.C.M.A. Convention

(Continued from page 150)

tion of these aggregates were increasing in number, but that the *demand* for the product was increasing so much faster that a lightweight aggregate shortage would probably have to be contended with for all of 1949. Rough figures were given on the capital outlay for the installation of a Haydite-type plant to show why there were not more of them being built. Mention was made of the West and Southwest as being particularly fortunate due to the natural deposits of pumice that occurred in those sections of the nation.

Recent projects of the association were briefly described including: research on aggregate sizes as related to compressive strength; curing methods, and types of radiant heating installations. The work being done by the association in collaboration with the A.S.T.M. on such matters as concrete masonry specification and standards was also discussed; as well as work of similar nature being carried out with local and national groups interested in fire-safety, etc.

Major work for 1949, according to Mr. Copeland, will include the technical reports to the association on the work now being carried out at the University of Wisconsin.

An announcement was made at this point that Paul Woodworth was the new chairman of the Technical Problems Committee of the A.S.T.M., replacing Jay Ehle, Cleveland Builders Supply, who had resigned due to press of outside work.

Apprentice Training

Deane R. Lynde, vice-president, Cinder Concrete Products, Inc., Denver, Colo., presented a paper titled: "Apprentice Training—How we helped develop an effective program to train new bricklayers." This was a detailed account of steps taken in the Denver area to overcome an acute shortage of bricklayer apprentices. Backbone of the plan was cooperation between block and brick producers, State boards, labor unions, contractors and the local trade school.

Mr. Lynde said that in the Denver area public acceptance of block construction was falling off due to the shortage of accredited masons; and as a result the company management took two steps, one of which was the instituting of a trade school course in bricklaying. The other step taken to increase public acceptance of block construction was the retaining of a publicity bureau to bring graphically before the public the advantages inherent in masonry wall construction.

Labor Incentives

"Labor Incentives and Teamwork in Industry" was the title of a paper presented by Leonard Giles, personnel director, Lincoln Electric Co., Cleveland, Ohio. Mr. Giles prefaced his remarks with the statement that "In recent years labor — management strife has cost both manufacturer and public entirely too much money." As a means of combating this strife, a sound policy of incentive management was offered as a solution—but with the caution that "it still requires good company management. Incentive management will not save a poorly managed company."

Mr. Giles pointed out that incentive systems varied from company to company, and that no tailor-made system would fit every type of manufacture. And he further commented that a live, vital and worthwhile cost-reduction system was of utmost importance to a successful incentive management plan. Mr. Giles made the statement that an incentive system was not a speed-up plan nor a trick form of pay. He further pointed out that a *must* to installing an incentive management plan was a willingness on the part of both management and labor to accept change.

Practical Instrumentation

The last morning session of the convention was presided over by Jay C. Ehle, Cleveland Builders Supply Co., Cleveland, Ohio, who introduced the newly elected president of the association, Harold L. Spaight, Cedar Rapids Block Co., Cedar Rapids, Iowa.

First paper to be presented was "Practical Instrumentation in Block Plant Operation," given by Morris H. Gross, Thermal Engineering Corp., Detroit, Mich. The voltmeter or ammeter was spoken of as a "must" in any well managed plant. The ammeter is used chiefly in the determining of possible over-loads on electric motors and circuits. There are many reasons for over-loaded motors, perhaps chief of which are too high belt tensions and dirt and grit that have entered the motor housing and bearings and under-capacity motors.

Two instruments useful in a boiler room installation are: a safety device connected to an alarm bell or indicator that is activated by stack temperatures and a low-water cut-off that automatically stops the firing mechanism whenever the water level reaches a predetermined low point. Thermometers are useful at several points in the plant, i.e., curing room (ceiling, mid-point and floor), thermocouples in block being cured, power house stack, etc. Potentiometers were spoken of as invaluable in research work if a true record of curing room temperatures is to be kept. CO_2 analysers are necessary in order to make a daily check on boiler efficiency, which record is essential if the utmost in fuel economy is to be obtained.

Two additional instruments helpful in maintaining an economically managed block plant are a tachometer and pressure reducing valve. The first can be used to check r.p.m. of motors to see if they are delivering rated power, as well as to check speed of pulleys, gear reducers, etc. Pressure reducing

(Continued on page 154)

New-Type Aggregate for Lightweight Block

ROMAN NEJELSKI, Fort Wayne, Ind., has announced the organization of the Yessolite Corp. which has as its main purpose the franchising of block manufacturers to use Yessolite. This new patented sawdust-type aggregate also can be used in the manufacture of mortar and other building materials. The product was developed by Mr. Nejelski during some three years of experimenting, and is said to make one of the lighter lightweight blocks, weighing 20-22-lb.

Yessolite block is said to have all the advantages of both block and wood construction without the disadvantages. The units can be sawed, nailed or drilled, and siding can be applied directly to them when laid up in a wall. No furring, lath or brown coat of plaster is needed on the interior.

Insulation value of the block is said to be the equivalent of 2 in. of cork. The units also serve as electrical insulators, and are fireproof. In a recent test, one block withstood 2000 deg. F. of heat from an acetylene cutting torch for over an hour, and was not too hot to handle. Char was less than ⅛ in.

According to Mr. Nejelski, Yessolite block produces a complete wall including insulation, to which only exterior and interior decoration need be added. The block wall is said to have some 14 elements of a conventional finished wall, including 2-3 coats of outside paint, sealer, siding, insulation, vapor barrier, lath, plaster and 2-3 coats of inside paint, or wallpaper. The units are resistant to cracking and frost, soundproof, sweatproof and ratproof; and, use of the block can reduce the cost of finished construction 25-40 percent, depending on the type of surfacing used, it is claimed.

The block require no special curing, and can be air-dryed above 70 deg., without excessive drafts, but should be protected from rain during curing. A standard make block machine is available through the Yessolite Corp.

Officers, who are also directors of the new corporation, are as follows: president, Roman Nejelski, Fort Wayne, Ind.; vice-president, W. L. Boening, Ferndale, Mich.; vice-president in charge of Eastern division, Joseph Speranza, Lockport, N. Y.; vice-president in charge of sales, Howard G. Wipperman, Lockport, N. Y.; secretary and treasurer, Robert Black, Detroit, Mich.; and legal counsel, Roe Heal, Detroit, Mich.

Offices of the corporation are located at Detroit, Mich., and Lockport, N. Y. Franchise sales are under the direction of Mr. Wipperman.

WESLEY HANSBERRY has purchased the interest of Edwin Hammer in the Hillsboro Cement Products Co., Hillsboro, Wis., and will continue in the business alone.

Get ALL the Advantages of Air-entraining with PROTEX

Resists Cracking Due to Freezing and Thawing
Greater Resistance to Scaling and Spalling
Finishes Quicker and Easier
Richer Looking Surface Texture
Reduces Bleeding and Segregation of Aggregate
Resists Sulphate Attack
Permits Hauling without Agitation
Greater Impermeability to Water

FREE BOOK ON AIR ENTRAINMENT

FOR LOWER FINISHED COST PER YARD OF CONCRETE . . . USE PROTEX AEA

AUTOLENE LUBRICANTS CO.
Industrial & Research Division, Denver 9, Colorado
Please send me your book, "Facts on Modern Placement of Concrete Through Air Entrainment."
*Name*_____
*Address*_____

JOIN 11,900 PRODUCERS WHO REGULARLY READ ROCK PRODUCTS

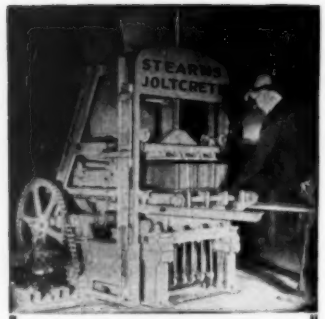
Color in Concrete

The easily dispersible, non-floating, permanent, qualities of these extra strong colors produce intense shades in concrete.

Special blends in ton lots at no additional charge. Working samples furnished.

629 W. Washington Blvd. Chicago, Illinois
1261 Broadway New York, 1 N. Y.

MINERAL PIGMENTS CORP., MUIRKIRK, MD.



"ANCHOR"

Complete

EQUIPMENT AND ENGINEERING SERVICE

Equipment for all phases of manufacturing concrete cinder block and other lightweight aggregate units. Our engineering service for new plants and modernizing old ones will help you operate more economically.

Stearns Clipper Stripper Machines; Stearns Joltcrete Machines; Stearns Mixers; Cast Iron and Press Steel pallets. Straubloc Oscillating Attachments, etc.

Repair parts for: Anchor, Stearns, Blystone Mixers and many others.

Anchor Concrete Mchy. Co.

1191 Fairview Ave., Columbus 12, Ohio

Wisconsin Block Meeting

(Continued from page 135)

the Milwaukee Journal. He told the manufacturers of the material necessary for a good publicity story on their product. When publicity on a certain project is desired, the newspaper reporter should be given the facts, which would include the details of construction, and preferably some feature angle which is new and will be of interest to his readers. Lots of things are commonplace to the block producer, but to the reporter and his readers they might be entirely new. He recommended that there be one man in the association, or in each company, if it is large enough, who will become well-acquainted with his local newspaperman and can work closely with him in furnishing information which will produce good stories for the paper and good publicity for the manufacturer.

Banquet—Officers

As has been the custom during the last two or three years, an outside speaker closed the meeting with discussion of a subject quite far removed from producing concrete block. Reverend T. Parry Jones, Sheboygan, Wis., combined sharp wit and deep thought in a presentation titled "Your Land and My Land." A banquet and entertainment was held on the last evening of the convention.

Officers chosen for the ensuing year are as follows: president, Wm. P. Siegert, Economy Block Co., Wauwatosa; first vice-president, Ellis Jensen, Janesville Sand & Gravel Co., Janesville; second vice-president, Harry Sorenson, Waylite Concrete Masonry Co., Racine; secretary, A. W. Devos, Devos Block Co., Milwaukee; treasurer, Wm. Schneider, Best Block Co., Milwaukee.

Directors elected are: Otto Ladwig, Jr., Otto Ladwig & Sons, Milwaukee; B. Vanderheyden, Vanderheyden Co., Milwaukee; A. Van Ess, Wm. Van Ess Co., Green Bay; Ed Olson, Badger Concrete Co., Oshkosh; Emil Fehr, Fehr Concrete Pipe Works, Inc., Claire.

N.C.M.A. Convention

(Continued from page 152)

valves are useful on air or water lines, especially when one source feeds several outlets requiring different pressures.

"Selling Concrete Masonry with Amateur Motion Pictures" was presented by Glenn C. Barnes, Barnes & Cone, Syracuse, N. Y. In the words of Mr. Barnes, "Through motion pictures you can take the architect into the plant, showing him how the block is made and the various quality controls that will assure the builder of a quality product; and then examples of the type of construction in which the client is interested can be shown, i.e.: churches, commercial buildings, homes, etc."

A typical movie of this sort was shown by Mr. Barnes that took one-half hour to run off. Shown were examples not only of local buildings, but also typical concrete masonry structures in other cities, with the statement that clients are interested in what is being done in other parts of the country with block construction. Of interest to all present were examples of slump-brick construction as used in Florida.

Next on the program was a talk, illustrated with slides, titled: "Applying the Principles of Modern Lighting to Concrete Block Plants," given by R. L. Dechant, sales engineer, Cleveland Electric Illuminating Co. Emphasis in Mr. Dechant's presentation was placed on benefits derived from good lighting, which were listed as aiding labor relations, productivity, quality and cost control. Illuminated slides were made of before and after shots of typical block plant lighting installations, showing various types of fixtures, use of which depended on the problem presented in each case.

Lightweight Aggregate Panel Discussions

Special panel discussions on individual lightweight aggregates were held on the first three afternoons. Separate meetings were held to discuss each of the following seven aggregates: Cinder, Haydite, Enslite, Pumice, Celocrete, Waylite and Superrock. These will be covered in a subsequent issue of ROCK PRODUCTS.

BUILDING BIGGER BENEFITS—Not only speeding up the whole cycle of changing raw materials into money, but transforming handling operations once exceedingly dangerous into easy routine tasks; *those are among the revolutionary benefits achieved by the Clark Method* of mechanized handling. To enjoy them in *your* business, take this wise first step: CONSULT CLARK.

Material Handling News is "Must" reading —send for it.

CLARK ELECTRIC AND GAS POWERED FORK TRUCKS AND INDUSTRIAL TOWING TRACTORS

INDUSTRIAL TRUCK DIV., CLARK EQUIPMENT COMPANY BATTLE CREEK 60, MICH.
REPRESENTATIVES IN PRINCIPAL CITIES THROUGHOUT THE WORLD
AUTHORIZED CLARK INDUSTRIAL TRUCK PARTS AND SERVICE STATIONS IN STRATEGIC LOCATIONS

Trinity White

the whitest white cement!

Trinity White is a true portland cement made from selected raw materials. It has all the excellent portland cement qualities of strength, endurance and workability. Use Trinity by itself for whiteness—with pigments for purer, truer color values. Use it in architectural concrete units, terrazzo, stucco. Trinity White Portland Cement — plain or waterproofed. Trinity Division, General Portland Cement Co., 111 W. Monroe St., Chicago; Republic Bank Bldg., Dallas; 816 W. 5th St., Los Angeles.

TRINITY WHITE
PORTLAND CEMENT

Faster Digging with UNIT 1020

UNIT takes a deep bite . . . swings fast and easy . . . moves dirt in a hurry. That's why it is the preferred excavator . . . used extensively all over the nation. Engineered for the really tough jobs with drop forged alloy steel gears and shafts completely enclosed and oil-sealed in UNIT's exclusive One-Piece Gear Case. Straight line engine mounting . . . Automatic traction brakes . . . Disc type clutches. UNIT's modern Full Vision cab promotes SAFETY, speeds up job. Investigate today!

Quick change **in the field to any desired attachment: Shovel . . . Crane . . . Clamshell . . . Dragline . . . Trenchoe . . . Magnet . . . Grapple.**

You can tell it's a UNIT by the FULL VISION CAB

UNIT CRANE & SHOVEL CORP.

6431 WEST BURNHAM STREET
MILWAUKEE 14, WIS., U. S. A.

A 5084-½H-R

AN AD . . . Written in its essential facts, by an Enthusiastic Owner of the KENT STEDIFLO MIXER

Wm. Moore Concrete Products
Cinder and Cement Blocks
RECEIVED
SEP 1 - 1948
September 16, 1948
KENT MACHINE CO.
The Kent Machine Company
Cuyahoga Falls, Ohio
Attn: Distal Urban
Gentlemen:
Yours truly,
Wm. Moore Concrete Products
Robert Moore

After one and a half years of service Hubert Moors writes:

"Handling 150 cubic yards of concrete per day — particularly satisfactory as cinders are highly abrasive — low operating costs — no time lost due to mechanical failures — proportioning accurate as shown by periodical checks of yield and strength — believe Stediflo can keep up with machine producing in excess of 1,000 8 inch blocks per hour — yield, strength and texture constant along with saving in power and labor — completely satisfied."

SOON TO BE ANNOUNCED are smaller continuous mixers embodying Stediflo principles, making the many advantages and economies available to plants of all sizes. Register your name for information.

The **KENT MACHINE CO.** Cuyahoga Falls, Ohio

Manufacturers of CONCRETE PRODUCTS MACHINERY *Since 1925*

QUALITY CONCRETE MASONRY CONSTRUCTION

Use Concrete Sills and Lintels for Quality Walls

WITH adequate footings in place and quality block laid in good mortar, another important step in concrete masonry construction is placing concrete sills and lintels in door and window openings.

Sills and lintels should be set level and firmly bedded in mortar of the same quality used in laying the wall. Head joints should be packed tight and pointed after the mortar has partially hardened. Lintel reinforcement should be designed for the load to be carried.

Write for free literature on this subject. Distributed only in the U.S. and Canada.

SILLS and LINTELS — THE FOURTH OF 6 IMPORTANT STEPS IN QUALITY CONCRETE MASONRY CONSTRUCTION

PORTLAND CEMENT ASSOCIATION Dept. A3-45, 33 W. Grand Ave., Chicago 10, Ill.

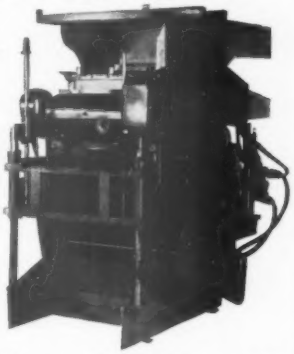
A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work

FLEMING
THE OF ST. LOUIS

FMC 180

THE QUALITY NAME IN CONCRETE PRODUCTS PLANT EQUIPMENT

Automatic Concrete Block Machine



CUSTOMERS SAY —

"I still say you should call it the 225 as it turns out that many per hour, day in and day out."
Kingsport, Tennessee

"While you rate them at 180 per hour, we are presently running both machines at a rate of 240 blocks per hour on each. Our total labor cost in the kiln is 1½ cents per block."
Wichita, Kansas

"The timing is positive and not regulated by the operator. But, best of all, the machine is well made."
Independence, Missouri

THE PLAIN PALLET VIBRATOR AT LOW COST!

COMPLETE BLOCK PLANTS ENGINEERED TO YOUR REQUIREMENTS

FLEMING MANUFACTURING CO. INC.
COMPLETE CONCRETE BLOCK PLANT EQUIPMENT

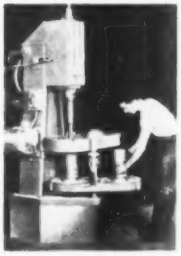
4987 FYLER AVE. - - - ST. LOUIS 9, MO.

CEMENT DRAIN TILE

Money-Making Manufacturing Opportunity

Today's tremendous demand for drain tile opens up a choice field for the wide-awake concrete products manufacturer. Either as a business by itself or as a profitable addition to the regular line.

The Champion machine makes all sizes of tile up to 12-inch diameter. With such a range you can supply not only the huge farm market, but many others where drain tile is urgently needed—reclamation projects, home building, road construction, subdivision activities, etc.



Low Cost—High Profits

Tile made on the Champion are outstanding in quality—dense, strong, uniform. Far better than clay tile yet can sell for less—even after allowing a handsome profit. Machine is simple, compact, easy to operate.

Get the facts. Write for interesting literature about the business and the moderate priced equipment.

CONCRETE EQUIPMENT CO.
562 Ottawa Ave., Holland Mich.

JAEGERS give you business advantages

In the producing end of your ready-mix business, Jaeger truck mixers alone give you the complete choice of sealed top-loading drums or end loaders, whichever fits your operation most efficiently. With either type you gain the advantage of a faster charging and discharge cycle, high daily payload average, and consistently low maintenance.

In selling, you benefit by the recognized higher strength of Jaeger dual-mixed concrete, accurately controlled for slump and free from segregation over any length of haul.

only Jaeger "Speed Merchants" give you:

- Two-speed mixing
- Positive fast water distribution with clog-proof jet
- Center drum drive in positive lifetime alignment
- Engine and water system fully enclosed from weather
- Dual-mixing action
- Sealed top loaders, best for wet-mix and most plants that ribbon-load at one point
- End-loaders for multi-point loading or very bulky material

Sizes from 2-3 to 5½-7⅜ yd. Ask for Catalog TM-8.

THE JAEGER MACHINE CO., Columbus 16, Ohio

Sales, Rentals, Service in 130 Cities of the United States and Canada

PORTABLE AND STATIONARY COMPRESSORS • PUMPS • 2-SPEED HOISTS

ECLIPSE

CONTINUOUS MIXER

Streamlining YOUR

CONCRETE BLOCK MANUFACTURING

More production and larger profits are yours when you install the Eclipse Continuous Mixer. This mixer is the ideal companion to the Eclipse Concrete Block Machine and the Eclipse Power Tamper. Easily loaded, quick uniform mixing, positive geared discharge. The paddles are attached to a square shaft assuring positive, trouble free operation. Paddle shaft easily removed for cleaning. Well constructed for longer life.

WRITE OR WIRE FOR FURTHER INFORMATION

MANUFACTURED BY

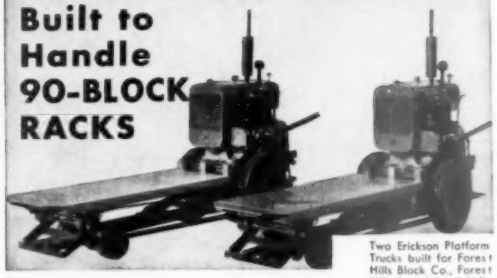
GEO. C. CHRISTOPHER & SON IRON WORKS

FOR FORTY YEARS THE WORLD'S BEST IN CONCRETE MACHINES

P. O. BOX 610 WICHITA, KANSAS

TWO *Ericksons*

Built to Handle 90-BLOCK RACKS



Two Erickson Platform Trucks built for Forest Hills Block Co., Forest Hills, Long Island, N.Y.

Faster Block Handling - at Lower Cost

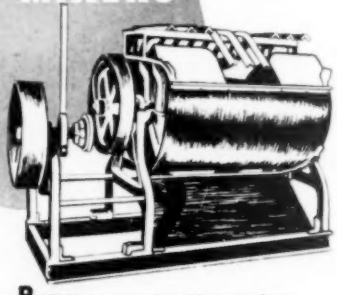
It will open your eyes to see the way these sturdy Erickson Lift Trucks with powerful International Engines handle a rack of 90 8x8x16 blocks. They pick up the racks from the ends, and place them close together in the kilns. Big pneumatic tires assure traction over unpaved runways. You can increase your output, reduce breakage, and lower handling costs with an Erickson.

We also make fork-type trucks in several models. Each Erickson is designed to fit its job. Write for literature.

Erickson SPECIAL EQUIPMENT MFG CO.

1405 MARSHALL ST. N. E. • MINNEAPOLIS 13, MINNESOTA

BLYSTONE MIXERS



BACKED by more than 35 years of specialized experience, BLYSTONE Mixers offer five basic advantages for a wide variety of concrete work: 1—Low *Initial Cost;* 2—Low *Mix Cost;* 3—*Thorough Mix;* 4—*Easy Operation;* and 5—*Sturdy Construction.*

Write for complete details.

BLYSTONE DIVISION

STANDARD SAND AND MACHINE CO.

549 W. Washington Boulevard • Chicago 6, Illinois

JOIN

11,900

PRODUCERS

WHO

REGULARLY

READ

ROCK

PRODUCTS

CLASSIFIED ADVERTISING

READY-MIXED CONCRETE AND CONCRETE PRODUCTS EQUIPMENT

Single insertion rate $10.00 a column inch. Larger insertions at lower rates; request Concrete Products Classified rate card. POSITIONS WANTED and POSITIONS VACANT (not display ads) $1.00 a column inch an insertion. Terms: Cash with order except contract advertisers who are billed monthly.

FOR SALE

1—Custom built concrete block machine $300.00
600 Pallets for above machine 300.00
1—Waukesha gasoline engine DU306-D in good condition from Koehring 27-E Paver 150.00
2—1½ cu. yd. Blaw-Knox Truckmixers each 400.00
1—1 cu. yd. Blaw-Knox Truckmixer 300.00
1—3 ton Plymouth Locomotive with recently overhauled Buda engine 24" gauge 150.00

ANDREWS CONCRETE PRODUCTS AND SUPPLY COMPANY
620 N. Massachusetts Ave., P.O. Box 394
Mason City, Iowa

TRUCK MIXERS
(Less Chassis)
PROMPT DELIVERY
10—JAEGER 4 YARD
Separate Engine Drive
200 gal. Water Tank
25 gal. Flush Tank
Excellent Working Condition
May be inspected at:
EDWARD EHRBAR, INC.
29 Meserole Ave. • Brooklyn, N. Y.
Evergreen 3-5000

FOR SALE

ASSETS OF MASTER BLOCK CO.

2 Multiplex super tampers
1 Clark Fork lift truck
1 Atlas 50 ft. belt conveyor
1 Conveyor—80 ft.
2 Multiplex 18 cu. ft. mixers
1 Air compressor—Hoist and air system including air operated bin gates
Pallets for block manufacturing: 1500—12", 1000—10", 2400—8", 2000—4", 200—Header fillers
60 Metal Block Racks 60—8" block cap.

PAUL L. MOSKOWITZ, Receiver
312 E. Wisconsin Ave.
Milwaukee 2, Wis.

FOR SALE

One Johnson 600 cubic yard cap., 8 compartments, 34 ft. Hex shaped mounted on 14" H-Beam, 67 ft. long; Batching Equipment, Water Batcher; Collectors, two, 2 yard Smith Mixer, Cement Elevator, about 300 ft. 24" Sand Conveyor with under truck feed conveyor; Hot water equipment, Air compressors, Heating Plant, Office Equipment. A plant built about two years ago and on account of its location was condemned and only was in operation about a month. Sold on Court Order. The plant is complete and is for sale at less than one half of the cost. If you are contemplating building a ready mix plant it will pay you well to come and see this before buying.

HASS WHOLESALE, INC.
3922 W. Sample St., South Bend 21, Ind.
Telephone—3-9407

SAVE $5500.00

A complete brick plant in nearly new condition. Good for at least 10 years capacity production, used less than one year, replaced by higher capacity machine. Capacity 14,000 brick per day. Can be seen in operation at our plant until April 1, 1949.
One Jackson Church Model C Brick Press, six pocket rotary, with 10 HP 3 phase 60 cycle, 440 volt motor, hopper extension and belt feeder. Cost New $6927.53
20 Steel Brick Tables, capacity 540 brick. Cost New $600.00
One 12 cu. ft. Besser Mixer with clutch pulley, V belt drive, 7½ HP Motor. Cost New $916.46
One Yale Towne Hand Lift Truck, Hydraulic, capacity 3500 lbs. Cost New $278.00
Total Cost New $8771.79

CASH SELLING PRICE F.O.B. OUR PLANT $3200.00

DAKOTA LIME & BRICK CO.
BOX 1072 PHONE 834
RAPID CITY SO. DAK.

Cast Specialty Molds

Cast iron or aluminum molds for making bird baths, flower urns, flower boxes, benches, sun dials and other ornaments. Block, tile and brick machines. WRITE

SPECIALTY MOLDS CO.
Dept. 309 Madison, Tenn.

FOR SALE

Forms for solid concrete silos, sizes for 10', 12' and 14' silos, with chute and roof forms included, forms are new and in good condition. Write—

VESTABURG SILO COMPANY
Vestaburg, Michigan Phone 2352

FOR SALE

Lith-I-Block Machine with plain pallets and steel racks 4", 8", and Chimney mold boxes.

PUMICE PRODUCTS COMPANY
Boise, Idaho

FOR SALE

1—12" cubic ft. mixer and hoist
2—Korpak—Block—Machines used one year
4"—8"—12"—mold boxes
Pallets—1,500 8", 2,000 4" and 1,000 12"
25—80 Block capacity steel racks complete—$3,950.00

Meriden Concrete Building Units, Inc.
Route No. 6 Rockaway, N. J.

FOR SALE

1—Besser K-12 Tamper Machine complete with all necessary equipment to start making block. Write

SCHNAITER LUMBER CO., INC.
Martinsville, Indiana

FOR SALE

2600—13x18½x5/16 plain steel pallets for Besser Victory Vibrapac or similar machine.

MONTFORT BROS.
Fishkill, N. Y. Phone Beacon 2032W

FOR SALE

Besser Multi-Mold Block Machine, perfect condition, used one year. Sani-Tank Septic Tank Mold—like new. Reasonable.

LOCATELLI CONCRETE PRODUCTS
85 First St. Laurium, Michigan

FOR SALE

Model K-5 Nelson Bucketloader in excellent condition.

ROCKLAND CONCRETE SALES CO., INC.
343 Broad Ave. Ridgefield, N. J.

NEW — NEVER USED

Magnetic Pulley Ding 24" diameter, 30" width, 2150 watt, standard 3⅛ shaft 5½, 230V DC high intensity waterproof pulley and collector rings. M10A rectifier, 230V AC primary, 230V DC, 2300 watt output with tubes, $2000.

MISSOURI VALLEY LIMESTONE
Phone 50 Macedonia, Iowa

FOR SALE

Hexagonal Shape
Concrete Sidewalk
Steel Forms

JOHN P. LEISING
SWORMVILLE, N. Y.

FOR SALE—BLOCK MACHINE

Latest Model KENT Automatic BLOCK MACHINE The "VIBRA-TAMP"—8 bar tamper with vibration on mould box—produced 1800 8" blocks per day—excellent condition—sacrifice 50% original cost.

HEARNE CONCRETE BLOCK CO., 4019 Gartin Ave., Ashland, Ky.

FOR SALE

One Kirkham Vibrator Block Machine
4 inch, 6 inch, 8 inch, mold boxes
12 cubic foot mixer
14 inch conveyor 20 feet long
1200 wooden pallets
PRICE $1500.00

BLACKSTONE MFG. & SUPPLY CO.
P.O. Box 272 Blackstone, Va.

ALSO SEE CLASSIFIED ADVERTISING ON OTHER EQUIPMENT IN ROCK PRODUCTS' GENERAL SECTION

For Sale

One Besser Super Vibra-Pac Block Machine and 50 cu. ft. Mixer for Immediate Delivery. Equipment 2½ years old and in A-1 Condition. $42,500.00.

Box H-38, Concrete Products, 309 W. Jackson Blvd., Chicago 6, Illinois.

FOR SALE

Used Korpak, hand operated, Concrete Block Machine Complete with electric motor and all attachments for

8x8x16 with 1560 Pallets
6x8x16 with 1000 Pallets
4x8x16 with 500 Pallets

Also one Barrett Lift Truck. Will sell at 50% off on equipment, 25% off on pallets. All good as new, ideal for small plant or to get started in business. Now operating at our plant, Orleans, Ind.

RADCLIFF & BERRY, INC.
Hardinsburg, Indiana

FOR SALE

2—4½ yd. Rex High Discharge Truck Mixers purchased 1947 new.
1—3 yd. Rex High Discharge Truck Mixers purchased 1947 new.
2—5 yd. Smith High Discharge Truck Mixers purchased 1942 new.
5—5½ yd. Rex Low Discharge Truck Mixers purchased 1943 new.
3—4 yd. Rex Low Discharge Truck Mixers purchased 1937 new.
1—Twin City Engine, Type "C," model "B-E," Serial 350041, 4 cylinder.
1—Wisconsin Engine, Type "E," 6 cylinder, 6x7, serial No. 1115.

Both engines are now in Model No. 5 Northwest Crane.

GENERAL SAND & STONE CORP.
Hartford, Conn.

FOR SALE

10,000 STEEL PALLETS FOR SALE 4 x 16 TO 12 x 16. TWO KELLEY AIR STRIPPER MACHINES 1946-1947 INCLUDING MOLD BOXES, CHIMNEY PALLETS AND STOCK OF NEW PARTS. CAN BE SEEN IN USE, IMMEDIATE DELIVERY.

HOFFMANN BLOCK CO.
Little Ferry, N. J.

FOR SALE

Besser Semi-Automatic K3 Tamper, 20' Mixer and Skip Hoist, Attachments for 8" Plain, 8" Rock Face, 8" Siding Block, 4" Cored and Solid and 12" block.....$1500.00
1900 Steel Pallets 13"x18".. 1100.00
45 Steel Racks—48 Block .. 1200.00

Special Price $3500.00 Complete

This equipment operating daily to be replaced by Besser Super Vibrapac in March.

VAN POPPELEN BROS.
1st and Sherman Sts., Bay City, Mich.
Phone 7503

FOR SALE

Dunn Drain Tile Machine. Good condition. Makes 4 and 6 inch tile. Price $195.00 FOB our plant.

CONCRETE PRODUCTS CO.
223 E. Vance St. Charlotte 6, N. C.

FOR SALE

Stearns Anchor block machine in good condition with 8" and 12" mould box and attachments. $300.00.

ACME BLOCK & SUPPLY COMPANY
1506 Mackinaw St. Saginaw, Mich.

FOR SALE

1—Water Pump—New C.M.C. 600-700 G.P.M. with 30 HP 220-440 electric motor (skid mounted)
1—Water Pump (New) C.M.C. 600-700 G.P.M. with 35 HP continental gasoline engine skid mounted.

ANDOVER SAND AND GRAVEL CO.
9 Broadway Lawrence, Mass.

FOR SALE

Besser K-3 Tamper, Kent Mixer, 90 Racks, 4,000 Pallets, Attachments for 3¾—7¾—11¾ Blocks. Complete with Motors. Priced for Quick Sale.

BEST BLOCK CO.
30901 5 Mile Rd. Plymouth, Mich.
Phone Detroit Exchange KE 2-4020

FOR SALE

W.A. 2264 White with 2-yard H.D. Jaeger Transit Mixer Sale $4500.00

E. W. BISETT & SON, INC.
BRADFORD, PA.

1 Stearns, clipper Model C, 1 skip hoist, 1 Stearns 12 ft. mixer, 17 wooden racks, 1 Service Caster lift truck with extra set wheels, 1000 8" pallets, 1 Rock and Panel-face attachment, Block machine, skip-hoist and mixer complete with motors.

BATTLE CREEK CONCRETE PRODUCTS CO.
Battle Creek, Mich.

Wanted: 500 Ventilated Chimney Pallets 15⅝ x15⅝x8¼" Hole.
For Sale: "Champion" Concrete Drain Tile Machine $595.00 with 4"-5"-6" attachments.

CONCRETE BLOCK AND SUPPLY CO.
John Sausser, Prop.
231 E. Pine Ave. Findlay, O.

GOOD, USED, PRESSED STEEL, OVAL CORE, 45⅝ A. S. NOMINAL SIZE 8x8x16 PALLETS:
1660 "BABA" (Standard).....80.40 ea.
155 "BABOON" (Sing. Cor.).... .45 ea.
25 "BALM" (Doub. Cor.)..... .45 ea.
50 "BASAL" (Sing. Sash)..... .45 ea.
Will Sell in lots of 100 or more

CALDWELL CINDER BLOCK CO., INC.
P.O. Box 346 Lenoir, N. C.

FOR SALE

PACKERHEAD PIPE MACHINES. Two Dixons make 4" to 10" pipe. One McCracken makes 4" to 24" pipe. All with or without equipment.

UNIVERSAL CONCRETE MACHINERY CO.
297 S. High St. Columbus, Ohio

FOR SALE
F.O.B. BLUEFIELD, W. VA.

2—Used Kirkman Vibrator Block Machines with 8" Mould Box in Good Working Condition at Sacrificed Price.

CITIZENS COAL & SUPPLY COMPANY
Box 606 BLUEFIELD, WEST VIRGINIA

FOR SALE

4 jackets to make 4" diameter, Bell end concrete pipe in two-foot lengths. Wall thickness ⅝" Annular space ⅝". Price with eleven bell packers $300

CONCRETE PIPE & PRODUCTS CO., INC.
P.O. Box 1223 Richmond 9, Virginia

FOR SALE

Besser Portable Block Cuber. Purchased in 1947. Used very little.

CONCRETE MASONRY UNITS
P.O. BOX 515
HAMILTON, OHIO

PRICED TO SELL

Number 5 Wonder tilting mixer, mounted 4 wheel truck with hard rubber tires. Triple seal vault forms enough to make 5 standard size vaults.

GALIEN CONCRETE TILE CO.
Galien, Mich.

FOR SALE

2 Besser K 3 Tampers with all standard attachments, Pallets, Rail Cars, Racks 2 Motor Transfer Cars, 4 new car wheels 17½" Dia.

HUD-CIN BUILDING PRODUCTS
700 North Ave., E. Westfield, N. J.

FOR SALE

Ideal Power Tamper Block Machine 8"x8"x16", Rock face, boulder, panel rope, plain, broken-ashler and watertable face plates. 600 iron and several wood pallets. 1 lifting jack, 20 tables. Porch column molds. Vase and Rail molds. Would exchange for Burial Vaults Mold.

C. C. HARSHBARGER
Ladoga, Ind.

FOR SALE

One FMC-100 Vibrator Block Machine, in good condition, permanent square end mold box, parts for half-block and steel sash block, some extra parts, complete with single phase motor and controls. Also a 6 cu. ft. paddle type mixer in good condition v-belt pulley and belts, no motor, some extra parts. Our reason for wanting to sell is that we have installed higher production equipment.

STANDARD CONCRETE WORKS
5th and Warner Streets
Guthrie, Oklahoma

FOR SALE

Fleming Vibrator Block machine with brick mold attachment. Machine never been uncrated. Barrett Craven lift truck like new. Reas. Priced.

OTTUMWA CONCRETE BLOCK CO.
908 S. Sherman St. Ottumwa, Iowa
Noble D. Carroll, Pres.

ALSO SEE CLASSIFIED ADVERTISING ON OTHER EQUIPMENT IN ROCK PRODUCTS' GENERAL SECTION

FOR SALE

1—FC George 2 block vibrator with air controlled mud box and Press Fac.	$3400.00
1—FC George batch mixer, cast iron liners; less motor	400.00
About 3000 clean 7⅝x15⅝x7⅝ steel pallets	1950.00
About 350 clean combination corner and sash pallets	262.00
About 550 clean 7⅝x15⅝x7⅝ partition pallets	275.00
1—Kent Dunker	160.00
Cost	$6467.00
Our Price	1800.00
You Save	$4667.50

Block Machine in excellent condition. Can be seen in production by appointment. Ideal for small plant but we have outgrown its capacity.

GERALD ASSOCIATES, INC., Union City, Mich., Phone 2121 or 2951

One 24"x36" Austin Western jaw crusher—UD18 International diesel engine—V belt drive—Apron feeder—Hopper—36" conveyor under trucks—30" discharge conveyor—all mounted on dual tandem 10.00x20 rubber tires with vacuum brakes.

One 36"x40" Dixie hammer mill—reciprocating feeder—electric motor driven—Super charged Murphy diesel engine—V belt drive—30"x24' conveyor—all mounted on 10.00x20 dual rubber tires with vacuum brakes.

One Gruendler 30"x40" center feed Hammer mill—30"x6' Seco vibrating screen feeder—electric motor V belt driven—Super charged Murphy diesel engine—V belt drive—30"x24' conveyor all mounted on 10.00x20 rubber tires with vacuum brakes.

One Seco 4x12' single deck electric vibrating screen driven thru V belts.

One 40"x8' double deck Universal vibrating screen electric driven thru V-belts.

One Cleveland DB30 wagon drill mounted on Chevrolet truck

One LeRoi 315D air compressor with UD18 International diesel engine on rubber tires.

One Eagle loader mounted on D40 International truck.

All above mentioned equipment with exception of Eagle loader was purchased new in 1946 and used less than one year. In perfect working condition.

HI-TEST STONE CO.
Box 87
Morris, Illinois

FOR SALE

3000 Plain Steel Pallets for Besser Victory Vibrapac at attractive price. Size: 13"x18½"x5/16". Condition: Excellent.

ADAMS CONCRETE PRODUCTS CO.
Varina, N. C.
Ph. Fuquay Springs, N. C. 219W

FOR SALE

Three-Wheeled Wagner Scoopmobile, with lights, presently equipped as a lift truck. Engine rebored and resleeved within past 60 days. Spare parts: 2 wheels, 1 engine, 1 transmission, 1 skip bucket, and other misc. $1500.00.

GENERAL CONCRETE PRODUCTS, INC.
15025 Oxnard St. Van Nuys, Calif.

FOR SALE

1939—3 cu. yd. Rex Mixer, Low discharge on International Tandem Truck. Good condition.

Salem Concrete & Supply Co.
Wilson St. Phone 3428 Salem, Ohio

FOR SALE

1 Multiplex Rock Face or Plain Stripper complete with pallets, mixer, conveyor, feeder pallet oiler, 10 H.P. motor with starter and two trucks.

IVES CONCRETE CO.
Box 326 Dixon, Ill.

FOR SALE

One No. 2 Flam Cement Block Machine, complete with hoist, skip, mixer, gravity conveyor, approximately 1,000 pallets, and moulds for both 6- and 8-inch blocks. Priced very reasonable.

Robert J. Hixson, The First National Bank of Orange Cove, Orange Cove, Calif.

2—9' Frost Dry Pans ..... $750.00 ea.
1—Apron Feeder 24'x2' 6" $400.00
1—American Hammer Mill—No. 136-Ser. No. 2397-V Belt Drive $1000.00
1—Besser Yard Hoist $1200.00

VOLZ FIRE CLAY COMPANY
Box 228, Clayton Station, St. Louis 5, Mo.

FOR SALE

Stearns Clipper Model A, 8" and 4" molds, 18 cu. ft. mixer, small fork truck, racks, pressed steel pallets, and some parts and accessories.

HUBBARD-PETTEE MASONRY CO.
P.O. Box 876 Greensboro, N. C.

FOR SALE—BARGAIN

Besser Master Vibrapac with 4 inch 8 inch and brick mold, 1000 iron pallets 13x18½ inches. No. 2½ Kent Continuous Mixer, nearly new. Ideal for small plant. $2,000.00.

WYOMING GLASS CO.
Box 1034 Rock Springs, Wyo.

FOR SALE

DUNBRIK MACHINE with 5000 steel pallets. Will make 15,000 bricks per day. Perfect condition.

HUGH HARRISON
45 Second St. San Francisco 5, Calif.

FOR SALE

Automatic Transporter complete with rubber wheels, Exide battery and Fansteel battery charger—Excellent condition—$550.00

HOVEY, INC.
3421 E. Court St. Flint, Mich.

FOR SALE

1—Lever press Wagoner Block Machine $100.00
1—Hiatt Vibrator Block Machine 500 steel pallets $500.00
1—Kirkham Vibrator Block Machine 8" mold box $650.00

BILTRITE CONCRETE BLOCK CO.
Sullivan, Missouri
C. R. Armistead, Owner

EQUIPMENT WANTED

WANTED: To Buy

1—Concrete Stave silo machine with power tamper and automatic air controls. Must have capacity of 400 staves per day and be in good condition.
18—Trays for curing staves
600—Metal covered wood pallets
1—Set 50' erection scaffold
1—Lift Truck
1—Good used Besser or Stearns block machine, with steel pallets and racks—must be Modular size.

McADOO BUILDERS SUPPLY
Union City, Tenn.

WANTED TO PURCHASE

Set of 30" and 36" T & G Hand Tamp Snow Jackets.

CONCRETE PIPE CO.
Div. of
Six Points Lbr. & Supply
1933 W. McDowell
Phoenix, Arizona

BUSINESS OPPORTUNITIES

FOR SALE

Fully equipped pumice and concrete block plant, recently erected, near pumice deposit. Total expenditure $18,000.00. Due to difficulty will sacrifice.

F. STEFANICH
Fulton-Fresno Bldg. Fresno, Calif.

Ready Mix Concrete operation for sale in North Jersey. 3 truck mixers with good will and customers. Reasonable. Write Box H-37, Concrete Products, 309 W. Jackson Blvd., Chicago 6, Illinois.

FOR SALE

Established Cinder Block plant in Craig, Colorado on U. S. Highway No. 40. Plant Building and steam sheds approximately 6000 square feet under cover. Stearns Model "A" Clipper machine, 1½ years old with 1800—8" and 600—12" pallets, steel cinder bin, crusher, elevator, 50-H.P. boiler, racks, spare parts and tools. About 100 acres of land with oil and mineral rights. Craig is a growing community at rail head in oil shale and Rangely oil territory. Modern five room house on property. Full price, $22,000. Write to Craig Block Company, Box 387, Craig, Colorado for further information.

FOR SALE OR RENT

Fully equipped plant for manufacturing var. sizes cinder or sand blocks in growing community near Du Ponts—R.R. Siding—Present capacity 4,000 Blocks per day. Contact

BURTON D. ZEHNER
11 N. Main St. Woodstown, N. J.

CEMENT COLORS

CEMENT COLORS—Write for samples and prices of **"LANSCO" CEMENT COLORS** in bright shades of RED, YELLOW, GREEN, BLUE, BLACK, BROWN. Manufactured by

LANDERS-SEGAL COLOR CO.
73 Delevan St. Brooklyn 31, N. Y.

CONCRETE BRICK COLORS
CEMENT COLORS
MORTAR COLORS
made by
BLUE RIDGE TALC CO., INC.
Henry, Virginia

FORMS FOR SALE

PUMICE FOR SALE

IDAHO WHITE PUMICE

A car load or a train load. Our supply is unlimited. (Processed ready to use.) This same pumice used in Blocks to obtain Fire Underwriter's B-4 approval.

POCATELLO PUMICE COMPANY
231 W. Center St. Pocatello, Idaho
Phone 555

POSITIONS VACANT

POSITION VACANT: Concrete Pipe Supt. or Asst. Supt. Must be experienced in cast and machine pipe production—especially in cast pipe of large diameter and long lengths. Give full experience data and salary expected. Box H-36 c/o Concrete Products, 309 W. Jackson Blvd., Chicago 6, Illinois.

Ring the Cash Register TWICE

on every sale of CONCRETE BLOCK

Trade Mark Reg. in U.S. Pat. Off.

It's easy to ring the cash register twice on every sale of concrete block. Block buyers need a paint to decorate and protect their block construction. What could be easier than to sell them Medusa Portland Cement Paint, the quality cement paint advertised to millions in the great national magazines. Make it a habit to ask your block buyers about their paint requirements, you'll make a double profit on many jobs.

You can sell Medusa Paint with complete confidence. It's made and backed by a reputable cement company with 57 outstanding years of service. Customers appreciate your telling them about this quality cement paint that really dresses up and adds years of life to block construction.

Cash in now on cement paint sales like many other block manufacturers. Stock an order of Medusa Portland Cement Paints in the ten attractive colors. Show sample to your customers. Tell them how it both seals the block and joints against moisture and decorates at the same time. Many sales of block will be a sale of paint. Start today by sending coupon for literature and prices.

SEND FOR FREE Booklet TODAY

MEDUSA PRODUCTS DIVISION
of MEDUSA PORTLAND CEMENT COMPANY
1029-2 MIDLAND BUILDING • CLEVELAND 15, OHIO

Gentlemen: Please send me copies of the booklets, "Painting Concrete, Stucco and Masonry" and "Other Information on Making Extra Profits with Medusa Portland Cement Paint," together with prices on Medusa Paints.

Name .....

Address .....

City ..... *State* .....

Also made by Medusa Products Company of Canada, Ltd., Paris, Ont.

INDEX TO ADVERTISERS IN THE CONCRETE PRODUCTS SECTION OF ROCK PRODUCTS

ALSO SEE INDEX OF ROCK PRODUCTS SECTION ADVERTISERS ON PAGES 178, 179

Acme Block & Supply Co. 165
Adams Concrete Products Co. 161
Anchor Concrete Mchy. Co. 154
Andorer Sand & Gravel Co. 160
Andrews Concrete Products & Supply Co. 159
Autolene Lubricants Co. 153

Battle Creek Concrete Products Co. 160
Besser Mfg. Co. 163
Best Block Co. 160
Biltrite Concrete Block Co. 161
Bisett, E. W., & Son, Inc. 160
Blackstone Mfg. & Supply Co. 159
Blaw-Knox Co. 131
Blue Ridge Talc Co., Inc. 161
Blystone Division 158
Butler Bin Co. 132

Caldwell Cinder Block Co., Inc. 160
Christopher, Geo. C., & Son Iron Works 158
Citizens Coal & Supply Co. 160
Clark Eqpt. Co. 154
Concrete Block & Supply Co. 160
Concrete Eqpt. Co. 157
Concrete Masonry Units 160
Concrete Pipe Co. 161
Concrete Pipe & Product Co., Inc. 160
Concrete Products Co. 160
Craig Block Co. 161

Dakota Lime & Brick Co. 159

Ehrbar, Edward, Inc. 159
Erickson Special Eqpt. Mfg. Co. 158
Fleming Mfg. Co., Inc. 157

Galien Concrete Tile Co. 160
General Concrete Products, Inc. 161
General Sand & Stone Corp. 160
Gerald Associates 160

Harrison, Hugh 161
Harshbarger, C. C. 160
Hass Wholesale, Inc. 159
Hearne Concrete Block Co. 159
Hi-Test Stone Co. 161
Hixson, Robert J. 161
Hoffmann Block Co. 160
Hovey, Inc. 161
Hubbard-Pettee Masonry Co. 161
Hud-Cin Bldg. Products 160

Irvington Form & Tank Corp. 161
Ives Concrete Co. 161

Jaeger Machine Co. 157

Kent Machine Co. 156

Landers-Segal Color Co. 161
Leising, John P. 159
Lith-I-Bar Co. 130
Locatelli Concrete Products 159

McAdoo Builders Supply 161
Medusa Portland Cement Co. 162
Meriden Concrete Building Units, Inc. 159
Mineral Pigments Corp. 153
Missouri Valley Limestone 159
Monfort Bros. 159
Moskowitz, Paul L. 159

Ottumwa Concrete Block Co. 160

Pocatello Pumice Co. 161
Portland Cement Association 156
Pumice Products Co. 159

Radcliff & Berry, Inc. 160
Reynolds Metals Co. 128, 129
Rockland Concrete Sales Co., Inc. 159

Salem Concrete & Supply Co. 161
Schnaiter Lumber Co., Inc. 159
Specialty Molds Co. 159
Standard Concrete Works 160
Standard Sand & Machine Co. 158
Stearns Mfg. Co. 164
Stefanich, F. 161

Trinity White Portland Cement 155
Twinplex Hydraulics, Inc. 133

Unit Crane & Shovel Corp. 155
Universal Atlas Cement Co. 126
Universal Concrete Mchy. Co. 152, 160

Van Poppelen Bros. 160
Vestaburg Silo Co. 159
Vibro-Plus Corp. 150
Volz Fire Clay Co. 161

Worthington Pump & Mchy. Corp. 134, 151
Wyoming Glass Co. 161

Zebner, D. Burton 161

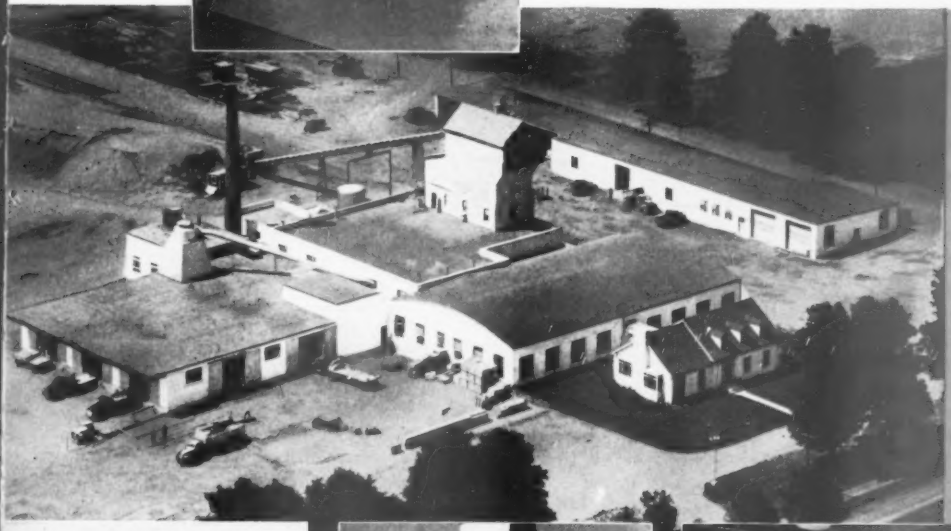
Another Leader★ IN THE CONCRETE PRODUCTS INDUSTRY PREFERS BESSER VIBRAPACS!

N. C. Schell, President, Schell Industries, Ltd., discussing Vibrapac block production with Del Fox, General Sales Manager of Besser Manufacturing Co.

Schell Industries, Ltd., operates the large, well-planned concrete block plant shown below. Located on the King's Highway, near Woodstock, Ontario, this elaborate plant is turning out Vibrapac better concrete masonry units on a profitable, fast production basis. Sand and gravel from the company's own pit, as well as slag from a nearby steel company, are used for aggregate. The green block are subject to low pressure steam curing. Schell's first Besser Super Vibrapac was installed in 1946 and is giving excellent service. Another Super Vibrapac is now on order.

BESSER MANUFACTURING CO., 115 - 49th St., Alpena, Mich.

Complete Equipment for Concrete Products Plants

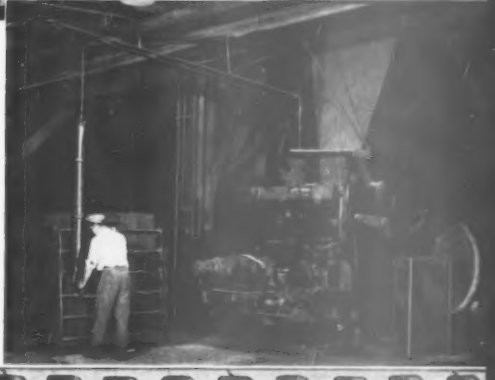


Aerial view of the Schell Vibrapac Block plant at Woodstock, Ontario. Includes complete woodworking shop for manufacturing doors, door frames, trim and mouldings.

★This is the 75th of a series of advertisements featuring some of the leaders of the Concrete Products Industry who are today stepping up block production with Besser Super Vibrapacs. Other leaders will be featured subsequently.

Schell's Vibrapac Block office — so attractive, people want the plans for residential construction.

Vibrapac Concrete Masonry units are delivered by Schell's own fleet of trailer-trucks.



Besser Super Vibrapac with Besser Off-bearing Hoist in the Schell plant. Fully automatic. No machine operator required. Only one man needed to guide the hoist.

ONE SET of PLAIN PALLETS for ALL SIZES of UNITS

BESSER *Super* VIBRAPAC

STEARNS CONCRETE BLOCK MANUFACTURING EQUIPMENT

PLANNING AND SERVICING BY EXPERT STEARNS CONSULTANTS

can mean

Super-Production for You!

When you buy Stearns Concrete Block Manufacturing Equipment and parts *from the Stearns Company*, you can be sure you are purchasing *GENUINE* articles, tested and proved long ago. And now Stearns offers you free of charge the services of its large staff of Consulting Engineers, so that you may achieve super-production even sooner! Planning new or modernizing old plant layouts . . . selecting, installing and servicing Stearns equipment . . . increasing operating efficiency—all by experts in their line, who know your problems and have already worked out *with you and for you* such modern advances as the new Stearns Mold Boxes and Pallets for Modular Sized Units and Replaceable Liners for All Joltcrete Machines. Yes, there is a great difference between knowing and guessing!

MODERNIZE WITH A STEARNS!
BACKED BY MORE THAN A
QUARTER-CENTURY OF KNOW-HOW

STEARNS
MANUFACTURING COMPANY · INC
ADRIAN • MICHIGAN

STEARNS 15

JOLTCRETES

CLIPPER STRIPPERS

MIXERS

SKIP LOADERS

TURNTABLES

SINTERLITE

HETHERINGTON & BERNER

DREDGING PUMPS

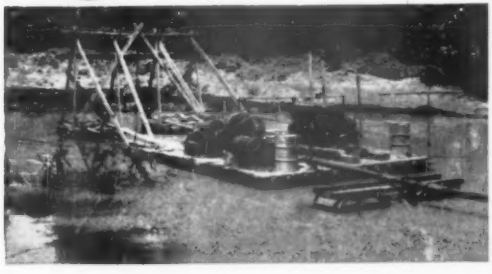
with wear-resisting semi-steel or manganese parts

H & B sand and gravel pumps are built in two general types: STANDARD (in 4″, 6″ and 8″ sizes) for use under ordinary working conditions and moderate heads, and DREADNAUGHT (in 6″, 8″, 10″, 12″ and 15″ sizes) for the tough, heavy-duty jobs with stringent head conditions. These performance-proven pumps are available promptly with either semi-steel or manganese parts.

Special bases and variations of drive arrangement may be had to meet special requirements. Your inquiries on pumping problems will have the prompt attention of H& B engineers, who have had many years of specialized experience solving such problems. Write for Bulletin DP-147.

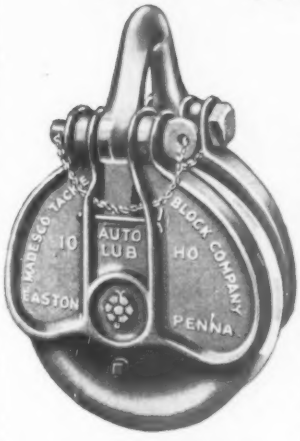
HETHERINGTON & BERNER INC.
717 Kentucky Avenue, Indianapolis 7, Indiana

Illustration shows an H & B pump installation in a typical small pit operation.



MADESCO BLOCKS stand the gaff

Protect Your Wire Rope Investment



wire rope blocks

USE GOOD TACKLE BLOCKS — check the age of the blocks you are now using.

Tackle blocks stay around a long time — that's the way we make them. However, sheaves, pins and bushings eventually show signs of wear. All these can affect the life of your wire rope.

MADESCO blocks will extend the life of your wire rope, due to Timken roller bearings, bronze bushings or automatically lubricated sheaves.

MADESCO blocks are made in a complete line to meet every requirement.

Send for complete catalog . . .

MADESCO
TACKLE BLOCK COMPANY
A subsidiary of Nazareth Cement Company

A quarter century of service

EASTON, PENNSYLVANIA

a Leader

GAYCO
Centrifugal Air Separator

The features embodied in the new model GAYCO Centrifugal Air Separator make them a leading means of increasing the capacity and efficiency of all types of grinding mills. They have quick, positive adjustment. When once adjusted they are not affected by variation in speed or rate of feed.

They require very little power to operate. And they feature the exclusive GAYCO principle of rejecting coarse particles by means of a centrifugal sizing fan. They separate 99% through 325 mesh, and give 35% to 30% greater recovery of fines.

★ Manufacturers also of "Reliance" Crushers, Screens, Elevators, Conveyors, Bin Gates, Grizzlies. Complete crushing, screening, and washing plants for crushed stone, sand and gravel.

Universal Road Machinery Co.

RUBERT M. GAY DIVISION 117 Liberty St. New York 6, N. Y.

Canadian Representative: F. H. Hopkins & Co., Ltd., Montreal

FACTORY & LABORATORY, KINGSTON, N.Y.

AJAX
FLEXIBLE COUPLINGS

The fact that all the horsepower goes through the coupling emphasizes the importance of protecting direct-connected machines against misalignment.

AJAX FLEXIBLE COUPLING CO. INC., WESTFIELD, N. Y.

T.C.

WOVEN WIRE SCREENS

ACCURATE • DURABLE • ECONOMICAL

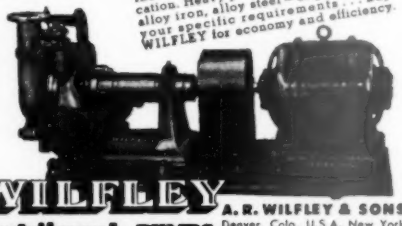
The reliability of T.C. Alloy Screens has carried them into all parts of the world. Made in Standard and Special Weaves, with Square or Oblong Openings — from 10 mesh, .035" wire on up. Write today for Catalog No. 42.

TWIN CITY IRON & WIRE CO.

35 W. WATER STREET • ST. PAUL 1, MINNESOTA

Slurries...handled at Lower Cost

Continuous operation without attention. Individual engineering on every application. Heavy pumping parts of rubber, alloy iron, alloy steel — engineered to your specific requirements . . . Buy WILFLEY for economy and efficiency.



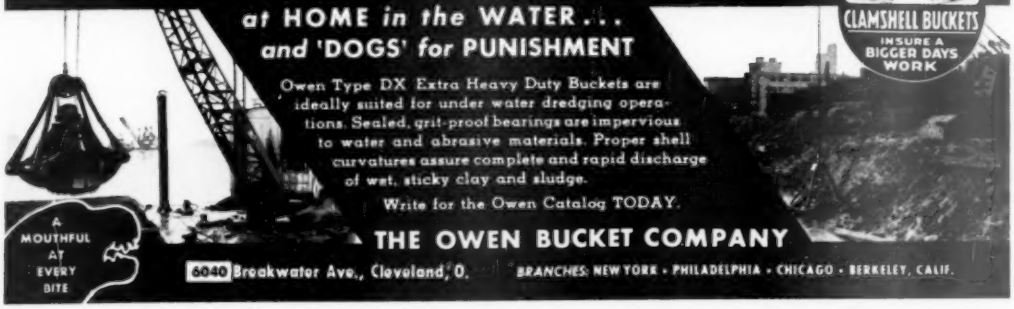
WILFLEY centrifugal PUMPS

A. R. WILFLEY & SONS, Inc.

Denver, Colo., U.S.A., New York Office 1775 Broadway, New York City

OWENS ARE 'WATERDOGS'

at HOME in the WATER . . . and 'DOGS' for PUNISHMENT



OWEN CLAMSHELL BUCKETS INSURE A BIGGER DAYS WORK

Owen Type DX Extra Heavy Duty Buckets are ideally suited for under water dredging operations. Sealed, grit-proof bearings are impervious to water and abrasive materials. Proper shell curvatures assure complete and rapid discharge of wet, sticky clay and sludge.

Write for the Owen Catalog TODAY.

A MOUTHFUL AT EVERY BITE

THE OWEN BUCKET COMPANY

6040 Breakwater Ave., Cleveland, O. BRANCHES: NEW YORK • PHILADELPHIA • CHICAGO • BERKELEY, CALIF.

BIGGER PAYLOADS *with* WELLMAN *Williams Type* BUCKETS

• Exclusive features in design and construction make payloads bigger... at lower cost! Weight is balanced, not cumbersome. Extra strength is built into every part with the sturdy **welded rolled steel construction** pioneered by Wellman, the leader for over fifty years. A type for every service!

THE WELLMAN ENGINEERING COMPANY
7025 CENTRAL AVENUE • CLEVELAND 4, OHIO

SEND FOR BULLETIN

FREE SERVICE *for BUYERS*

Here is the quick way to get information and prices on machinery and equipment. Just check the item (or items) listed below about which you desire information. Then send this page to us, and we will take care of the rest.

TEAR OFF HERE

.....Admixtures, Aggregate	.....Classifiers	.....Dryers	.....Locomotives	.....Speed Reducers
.....Aftercoolers, Air	.....Clutches	.....Dust Collecting Equipment & Supplies	.....Lubricants	.....Tanks, Storage
.....Aggregates (special)	.....Coal Pulverizing Equipment	.....Electric Motors	.....Mills	.....Tractors
.....Air Compressors	.....Concentrating Tables	.....Engineering Service, Consulting and Designing	.....Pulverizers	.....Trucks, Industrial
.....Air Separators	.....Concrete Mixers	.....Explosives & Dynamite	.....Pumps	.....Trucks, Mixer Body
.....Asphalt Mixing Plants	.....Concrete Mixing Plants	.....Fans and Blowers	.....Scales	.....Trucks, Motor
.....Bagging Machines	.....Concrete Specialty Molds	.....Flotation Equipment	.....Screen Cloth	.....Vibrators
.....Bags	.....Concrete Waterproofing and Dampproofing	.....Gasoline Engines	.....Screens	.....Welding & Cutting Equipment
.....Barges	.....Conveyors	.....Gear Reducers	.....Scrubbers: Crushed Stone, Gravel	.....Winches
.....Batchers	.....Crushers	.....Generator Sets	.....Shovels, Power	.....Wire Rope
.....Belting, Conveyor, Elevator, Power Transmission	.....Coolers	.....Grinding Media		
.....Belting, V-Type	.....Cranes	.....Gypsum Plant Machinery		
.....Belt Repair Equipment	.....Derricks	.....Hard Surfacing Materials		
.....Bin Level Indicators	.....Dewatering Equipment, Sand	.....Hoists		
.....Bins and Batching Equipment	.....Diesel Engines	.....Hoppers		
.....Blasting Supplies	.....Dragline Cableway Excavators	.....Kilns: Rotary, Shaft, Vertical		
.....Block Machines Concrete Building	.....Draglines			
.....Bodies, Trailer	.....Dredge Pumps			
.....Brick Machines and Molds	.....Drilling Accessories			
.....Buckets	.....Drills			
.....Bulldozers				
.....Cars, Industrial				

If equipment you are in market for is not listed above, write it in the space below.

_____

_____

_____

Send to:

Research Service Department
ROCK PRODUCTS
309 W. Jackson Blvd. • Chicago 6, Illinois

Your Name..... Title.....

Firm Name .....

Street .....

City ..... State.....

RP-3

From the SMALLEST to the LARGEST TONNAGES

TYLER-NIAGARA SCREENS

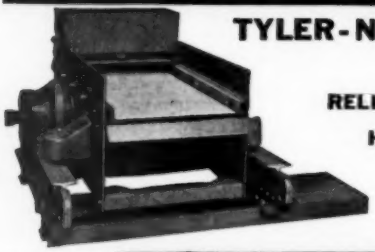
are

RELIABLE

HIGH CAPACITY

EFFICIENT

ECONOMICAL



2' x 4' Type 100 Tyler-Niagara Screen

6' x 14' Type 900 Tyler-Niagara Screen

THE W. S. TYLER COMPANY, Cleveland 14, Ohio

HAYWARD BUCKETS

WON'T QUIT OR CAUSE TIME OUT

A Hayward Bucket keeps the job going ahead on scheduled time. It won't quit or cause time out.

THE HAYWARD COMPANY
202-204 Fulton Street
New York, N. Y.

The "Quinn Standard"

FOR CONCRETE PIPE

The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 30 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that Quinn pipe forms and Quinn mixing formulas combine to produce the finest concrete pipe at lowest cost.

Quinn Heavy Duty Pipe Forms

For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for any diameter of pipe from 12 to 84 inches—tongue and groove or bell end pipe at lowest cost.

WRITE TODAY

Complete information, prices and estimates sent on request. Also manufacturers of Quinn Concrete Pipe Machines.

QUINN WIRE & IRON WORKS 1603 12TH ST. BOONE, IA.

PLATEGRIP

PLATE FASTENERS FOR CONVEYOR BELTS

Make strong dust-tight, water-tight joints in belts of any width. Special design spreads tension uniformly across belt, allow natural troughing of belt and assures smooth operation over flat, crowned or take-up pulleys. Sizes for belts of from 1/4" to 1 1/2" thickness. Write for Catalog Sheet.

ARMSTRONG BRAY & CO.
5366 Northwest Highway, CHICAGO 30, U. S. A.

Also Repair Plates For Mending Belts

PERFORATED METAL SAND AND GRAVEL SCREENS

Manufactured exactly to your specifications

Any size or style screen, in thickness of steel wanted with any size perforation desired.

We can promptly duplicate your present screens at lowest prices

CHICAGO PERFORATING CO.
West 24th Place
CHICAGO 8, ILLINOIS
Virginia 7-6757

BLASTING MACHINES

$4.50 originally manufactured for the U. S. Army by White-Rodgers Elec. Co. Detonate electric blasting caps. 10 cap capacity.

BRAND NEW CONDITION

Terms: Cash with order—price F.O.B. Indianapolis

ESSE RADIO CO. 140 W. New York St. Indianapolis 4, Ind.

CONCRETE BURIAL VAULTS

AMERICA'S FINEST MOLDS AND LOWERING DEVICES

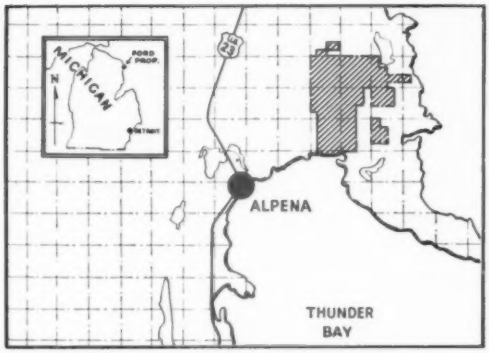
BERG VAULT SYSTEM

TERRITORY FRANCHISES

BERG VAULT CO.

EQUIPMENT DIVISION

1820 LUCAS HUNT RD. | ST. LOUIS 20, MO.



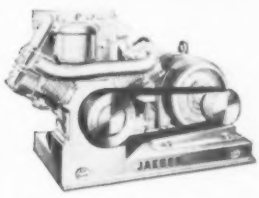
FOR SALE BY
FORD MOTOR COMPANY
3,967 Acres Quality Limestone

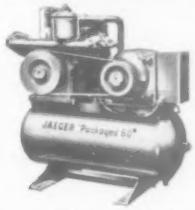
Excellent industrial buy! 3,967 acres almost completely high-grade limestone. Two miles northeast of Alpena, Michigan. Established county roads across the area. Good frontage on Thunder Bay for waterway shipment.

For further information write to:

FORD MOTOR COMPANY
REAL ESTATE SECTION
3000 Schaefer Road • Dearborn, Mich.

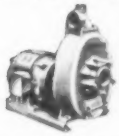
JAEGER STATIONARY COMPRESSORS





Jaeger belt-driven compressors are micro-precision built to deliver 100-lb. air dependably and with minimum maintenance. Balanced, 2-stage units, air-cooled and force-feed lubricated, in 60, 105, 160, 210 and 315 cfm sizes—for electric, gasoline or diesel power. Available with or without steel base. The "Packaged 60" is a complete ready-to-operate unit, with 60 cfm compressor, 15 hp motor and air receiver.

Jaeger self-priming centrifugal pumps, in 1½ to 10-inch sizes, deliver 3,000 to 200,000 gallons per hour. Used for heads to 120 feet. Motor driven. Sure to prime. Handle large solids easily.

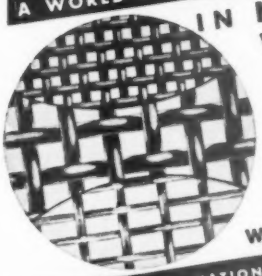


Jaeger Compressors and Pumps are also built in portable, engine-driven models. Pumps — 1½ to 10-inch. Compressors — 75 to 600 cfm at 100 lbs. pressure.

For catalogs, prices and name of nearest distributor, write

THE JAEGER MACHINE COMPANY
Columbus 16, Ohio

Industry has
A WORLD OF CONFIDENCE
IN NAT-ALOY
WIRE CLOTH



COVERS EVERY REQUIREMENT

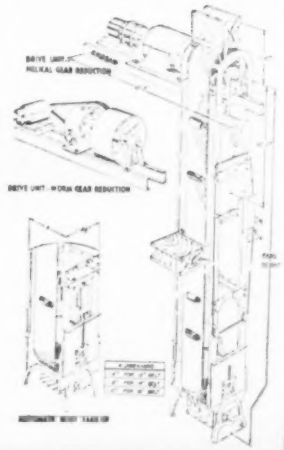
. . . for a dependable, long-wearing, non-crystallizing Screen Cloth. Has "Nat-Aloy" Lock Crimp Meshes. Preferred for screening accuracy, economy and serviceability. All Sizes — All Meshes — All Gauges.

Write for Catalog No. 55

NATIONAL WIRE CLOTH CO., INC.
St. Paul, Minn.

JOIN
11,900
PRODUCERS
WHO
REGULARLY
READ
ROCK
PRODUCTS

EHRSAM EMPLOYEES ELEVATOR
makes you MONEY



Steps saved . . . money saved. And when you count the steps saved, through use of an Ehrsam elevator, it means a neat profit for you.

Ehrsam Employees Service Elevator is made for 3 widths of belt, 12", 14" and 16" with three types of drive units of either 3, 5 or 7½ horsepower. Special applications for bags and boxes. Installation costs are reasonable. Write today for complete information.

THE J. B. EHRSAM & SONS
MANUFACTURING COMPANY
ENTERPRISE, KANSAS

CLASSIFIED ADVERTISEMENTS

FOR SALE

150 CRANES

½ and ¾ YARD

TRUCK --- CRAWLER and CRUISERS

LORAINS — INSLEY — LIMA
P & H — BUCYRUS-ERIE-UNIT — BYERS
BAY CITY — NORTHWEST — OSGOODS
LINK BELT SPEEDERS — MARIONS

AS IS OR RECONDITIONED AT VERY LOW PRICES

ELLIS-NOVACK CO.

1925 Buena Vista — Burbank, Calif.
Phone Charleston 8-1641

SPECIAL OFFERING

1—New 18x32 solid steel frame style D crusher.

1—New 14x26 solid steel frame jaw crusher.

1—No. 6 McCully crusher in good running condition, just taken from service.

2—6′ dia. 12x16′ long scalping screens 2¼″ manganese perforations.

A number of new manganese steel screen sections for Allis Chalmers 6′ revolving screens . . . Reasonable.

New and rebuilt jaw crushers in all sizes from 6x10 to 42x60.

ACME ROAD MACHINERY COMPANY, Frankfort, N. Y.

LOW PRICED — NORTHWEST

Northwest "Model 104" crawler gas Crane, Serial No. 2417, late type crawlers, feather touch controls, 1¼ yd., just overhauled. Sacrifice for only, $4,800.00.

1¼ yd. Shovel Attachment for additional, $1,200.00.

Prices f.o.b., Detroit

THE ACME EQUIPMENT CO.

14057 Schaefer Highway
Detroit 27, Mich. — VErmont 7-0366

Consult Albert!

Tubular Piling, Points, Sleeves and Cobi Pile Tips
Power Piping Fabrication
Supplies of Fittings, Valves and Tube Turns
Pipe—Small and Large Diameters, Iron and Steel, Welded, Seamless, Corrugated

Albert Pipe Supply Co., Inc.
Berry & N. 13th St., Brooklyn, N.Y.
Phone: Evergreen 7-8100

FOR SALE

One Westinghouse Steam Turbine and Alt. Curr. Generator of 125 KVA—440 Volts—60 cycle—3 phase—160 amps, used but in good condition, complete with brand new Penn-single panel, dead-front switch gear assembly. Address inquiries to Northwest Magnesite Co., Box 279, Cape May, N. J

ELECTRICAL MACHINERY

Motors and Generators, A.C. and D.C. for sale at Attractive Prices. Large Stock. New and Rebuilt. All fully guaranteed. Send us your inquiries.

V. M. NUSSBAUM & CO.
FORT WAYNE, IND.

CONSULT US BEFORE BUYING OR SELLING USED FARREL-BACON CRUSHERS SIZES 60″x48″ to 10″x7″

As manufacturers of these machines we are in a position to assure you as to condition and operating ability. Send for catalog.

149 Broadway **BACON-PIETSCH CO., INC.** **New York 6, N. Y.**

LOCOMOTIVES — CRANES
QUARRY TRUCKS

1—45 ton G.E. Diesel Electric standard gauge locomotive, excellent condition.

1—10 ton Davenport Gas Locomotive, 36″ gauge, completely rebuilt.

6—Euclid trucks, 15 ton rear dump with 12 yd. bodies. Cummins diesels.

BIRMINGHAM RAIL & LOCOMOTIVE CO.

BIRMINGHAM 1, ALA.

1—30″x13″ Farrel-Bacon Jaw Crusher Type D, low front with repair parts $1,000.00
1—D-12, K38 American Pulley Base 100.00
1—60 H.P. 1160 RPM 440 V. 60 cy. 3 phase motor, with switch, controler and resistance, mounted on frame 1,100.00
1—12″ Compass Endless Belt 100.00
1—24″ Gyrasphere Crusher Shop No. 6173 ..... 4,000.00
1—40 HP 860 RPM 440 V. 60 cy. 3 HP Motor with switch, controler and resistance mounted on frame 1,000.00
1—10B Telsmith Gyratory Crusher Shop No. 1410 ..... 1,800.00
1—13B Telsmith Gyratory Crusher Shop No. 1420 ..... 2,500.00
1—Shovel Front for 10B Bucyrus-Erie with ¾ Bucket 450.00
2—Single drum Clyde friction elec. hoists with 7½ HP motors, 220V. 60 cy. 3 phase, rope speed 35 ft. per min., Pull 5,500 lbs. 350.00 ea.
1—48″ wide x 32′0″ lg. Link Belt Dewatering Flight Conveyor similar to cut in Link-Belt Catalogue No. 800, Page 1181 ..... 2,500.00
2—New No.K-1400 3 compartment Blaw-Knox aggregate bins with No. 125DTM aggregate batchers and springless ..... ea. 8,000.00
1—2′0″ wide x 15′0″ lg. 8SFR Dorr Classifier Serial No. U83579 less motor 1,152.00
1—3′0″ wide x 15′0″ lg. 10SFR Dorr Classifier Serial No. U83580 less motor 1,548.00
1—Ingersoll-Rand Compressor Class ER1 Shop No. 39442, size 10″x10″ complete with idler and endless belt but not motor 200.00

THE ARUNDEL CORPORATION
Pier 2, Pratt St.
Baltimore 2, Md.

MACHINERY

Immediately Available

5—5′x12″ Two Surface Tyrock F-600 Screens. Complete with Motors.

1—No. 84S Type R Allis Chalmers Crusher. Complete with Motor.

This Equipment Now Has Never Been Operated

Blue Diamond Corporation
Los Angeles

FOR SALE

Byers Bear Cat. Jr., ¾-yd. shovel, back hoe crane boom and clam bucket and trailer in good condition.

STUART BROS.
VOLANT, PA.

ALSO SEE READY-MIXED CONCRETE AND CONCRETE PRODUCTS EQUIPMENT CLASSIFIED ADVERTISING IN CONCRETE PRODUCTS SECTION

FOR SALE

LeTOURNEAU CARRYALL — Model LP — Serial No. S19050LP. No spare parts.

OSGOOD SHOVEL — 1¼ yd. — Serial No. 2129 — New Caterpillar motor size 8800—$1500 worth of spare parts included.

AUSTIN-WESTERN GRADER — Model 77 SR—Serial No. 2886—Approximately $500 worth of spare parts.

LIMA POWER SHOVEL — Model 34 Paymaster — Serial No. 2886—1 yd. bucket—Approximately $500 worth of spare parts included.

BATON COAL COMPANY

1100 Union Trust Bldg., Pittsburgh 19, Pa.
Telephone: ATlantic 1576—77—78

FOR SALE

NEARLY NEW UNIVERSAL TWIN DUAL PORTABLE CRUSHING PLANT

Latest model—less than 1 year old—Consisting of 1024 jaw, 24" Twin Dual Roll, 3'x10' screen, 30" belts and G.M. power unit.

This equipment is perfect in every detail and will bear closest inspection, plant available at a real discount.

For Details Contact

DILLON, SHARPE & CO., Columbus Junction, Iowa

SALE—EXCHANGE—OR RENT

1—10' Stephen Adamson Heavy Duty Pan Feeder with Speed Reducer and 5 HP Motor—New
1—12' Kremser Heavy Duty Pan Feeder with Speed Reducer and 5 HP Motor—New
1—No. 40 Telsmith Reduction Crusher
1—14"x24" Allis Chalmers Roll Crusher
1—24"x5' Barber Greene Reciprocating Plate Feeder
1—30"x5' Kremser Reciprocating Plate Feeder
1—150'x24" Barber Greene Belt Conveyor
1—7'x9' Barber Greene two (2) Compartment Steel Bin
1—55' center Link Belt heavy duty chain Bucket Elevator with 18" Bucket, new.
1—75 HP G.E. Motor 3/60/40 RPM 860 Style B.U. 4017—Serial No. 160465
1—50 HP Crocker Wheeler 3/60/220 RPM 900 Type 5000 Serial No. 57381—Slip ring
1—25 HP Westinghouse 3/60/220 RPM 780 Style 253700A Serial No. 2379757—Slip ring
1—20 HP G.E. 3/60/440 RPM 860 Style B.U. 4017 Serial No. 129953

(All above Motors are rebuilt and guaranteed)

2—5 HP Westinghouse 3/60/220/440 RPM 900 Frame 324 Type C. S. Style 1082155 Serial No. 47641 Ball Bearing—New

FRANK A. KREMSER & SONS, INC.
3435-45 N. 5th St.
Phila. 40, Pa.
Re 9-7524
Re 9-7272

FOR RENT OR SALE

Allis-Chalmers HD-14 tractor with 6 cylinder G.M. diesel engine, in very good condition.
Allis-Chalmers HD-7 tractor with 3 cylinder G.M. diesel engine and Baker hydraulic dozer.
Caterpillar R9-4 tractor equipped with LaPlant-Choate dozer. Less than 1000 hours.
Pacific full revolving 10 ton truck crane, I.H.C. motor mounted on Ford V-8 10 wheel pneumatic tired truck. Excellent.
Baker CFX 5 ton rubber-tired shop crane, Wisconsin gasoline motor direct connected to generator furnishing power to four Individual electric motors. Same as brand new.
Allis-Chalmers Speed Ace, 7 yd. bottom dump truck with A.C. pneumatic tired tractor.
500 HP Ford V-8 industrial gas engine. Brand new.
2x6 Allis-Chalmers single deck screen V-belt drive and motor. All brand new.
1½x3 Allis-Chalmers single deck screen V-belt drive and motor. All brand new.
Sullivan air compressor, 160 cu. ft. per minute at 125 lbs. 40 HP A.C. 220/440 electric motor mounted on rubber tired trailer. Has done less than one week's work.
Machinery located at Chillicothe, Ill., except compressor, which is at Butterfield, Arkansas.

COOGAN GRAVEL COMPANY
903 Jefferson Building
Peoria, Illinois

SHOVELS — CRANES — DRAGLINES

Lorain 82 2 yd. Diesel shovel.
Lorain 80 1½ yd. Hi-Lift Shovel. Diesel.
Buc-Erie 37B 1¼ yd. shovel. Diesel.
Marion 362 1¼ yd. shovel. Diesel.
Northwest 6 1¼ yd. Diesel shovel.
Buc-Erie 120B 5 yd. shovel. Elec.
P&H 1225 2½ yd. shovel. Elec.
Buc-Erie 175B 7 yd. shovel. Elec.
Marion 37 2 yd. shovel. Elec.
Bay City 30 ⅝ yd. elec. tunnel shovel.
Marion 480 steam shovel; 2 yds.
Factory new P&H 1055 dragline, 80' boom, Diesel.
Bucyrus-Erie 54B 2½ yd. Diesel shovel.
Bucyrus-Erie 6 yd. steam shovel on Cat.
Koehring Model 304 Diesel Shovel, ¾ yd.
Bucyrus-Erie 15B ½ yd. Shovel.
Lorain 820 factory new, 2 yd. Diesel Shovel.
Bucyrus-Erie 120B 5 yd. steam shovel.

DREDGES

Morris 10" on steel hull. Elec.
Morris 10" on steel hull. Diesel.
Erie 8" Diesel powered with cutter head.
Bucket Type, steam; 1 yd. bucket.

AIR COMPRESSORS

Penna. 1300 cfm Direct Connected; elec.
New Penna. 900 cfm; synchronous motor
I-R 14x12; rebuilt; 525 cfm; elec.
C.P.T.C. portable Diesel; 500 cfm; on pneumatics.
C.P.T.C 805 cfm; V-belt drive; elec.
C.P.T.C. 105 cfm portable on pneumatics, gas.
C.P.T.C. 315 cfm Diesel portable on pneumatics.

TRACTORS

Cat. D4 with Trackson front end loader.
Cat. D4 with T4 Traxcavator, 1 yd. bucket.
Int. TD9 with front end loader and bulldozer.
2 Cat. D8's with cable angledozers, 2U series.
Cat. D4 with side dump for pipe laying.
Int. TD24 with push plate; used 690 hrs.
Cat. D7 D.D.P.C.U. and angledozer.
Cat. D7 with Hydraulic bulldozer.

DRYERS

Manitowoc 6'x50' has speed reducer drive.
Bartlett & Snow 8½'x30' Brick lined.
Madsen 6'x26', New, Never used.
6'x71' Rotary Dryer. Complete with furnace and stack.

SMITH TILTING MIXERS

2—54 ft. with 30 HP AC Motors, etc.

TRUCKS

10—1 ton Int. Cargo Trucks, 4x4 with winches.
50 Diamond T, 6x6; 4 yd. dump bodies.
10 GMC 2½ ton 6x4, 6x6, 164" wheel base.
4 Rear Dump Euclid Model 27FD.
Mack LF5W—4 yd. dump trucks, Diesel.

CRUSHERS — CRUSHER PLANTS

Cedar Rapids Pittmaster Straight Line Crushing Plant.
Cedar Rapids, port. crushing plant 150 tph.
Cedar Rapids, port. crushing plant Model AAA.
JAW: Farrell 6x20, 13x24, 36x24, Cedar Rapids 10x36 Roller Bearing Telsmith 18x32, Universal 15x24, 15x36, Acme 6x20, 14x26, 18x32, 10x42, Acme 10x42, Acme 18x32, Telsmith 18x32, Acme 16x32, Farrell 24x36, Buchanan 36x42, Traylor 42x48, Cedar Rapids 10x36, Farrell 42"x40.
GYRATORY: Traylor 14" TY 1'8", Al-Chal. 6, 8, 16, 30, 42, Kennedy-Van Saun 19½, 25, 39, 49S.
HAMMERMILLS: Williams No. 5 and No. 6, Penna. 20x32, Williams Slugger No. 40.
ROLL: 24x16, 40x22, 54x24, 36x16, 36x24.
ROD MILLS: Hardinge 5'x12', Marcy 3'x8'
BALL MILL: Al-Chal. 3'8"x18', Al-Chal. 4'x4' granulator, Kennedy-Van Saun 7'x5'.

READY MIX CONCRETE PLANT

Blaw-Knox complete plant, 105 ton 3 compartment aggregate with 200 bbl. bulk cement bin. New 1946.
Johnson 3 compartment 100 tons plant complete with aggregate and cement compartment.
Heltzel 300 bbl. bulk cement bin with weigh batcher.
Johnson 500 cu. yd. hexagonal bin with 3 aggregate and one cement compartment.
Butler 300 ton 2 compt. bin, 1 compt. 400 bbls. cement; 2 compt. aggregate. Complete with weigh batcher and bucket elevator.

LOCOMOTIVES AND DUMP CARS

12 K&J 16 yd. Air Dump Cars, std. ga.
8 Koppel 5 yd. 36" Ga. Dump Cars.
10 Western 4 yd. 30" Ga. Dump Cars.
Whitcomb 30 ton Gas-Elec. Std. ga. Loco.
Plymouth 20 ton gas Loco. Std. ga.
Plymouth 12 ton gas Loco. 36" ga.
Whitcomb 65 ton Diesel-Elec. Std. Ga. Loco.
G.E. 45 ton Diesel-Elec., std. ga.
Davenport 45 ton Diesel-Elec., std. ga.
Vulcan 12 ton gas, std. ga.
2 Porter steam Loco. 12 tons, 36" Ga.
Baldwin 50 ton Steam Std. Ga.
Vulcan 25 ton Steam Loco. Std. Ga.
Plymouth 30 ton std. ga. Gas. Loco.

DERRICKS AND HOISTS

Lambert 25 ton Guy derrick 115' bm.
American Terry 20 ton Guy Derrick 100' bm.
American Terry 20 ton stiff leg derrick 60' legs, included is a Lambert 3 drum elec. hoist with gearcd swings.
American Terry 10 ton steel stiff leg derrick.
Lambert Steel Guy Derrick 20 ton cap.
Morrison 25 ton stiff leg; 105' boom; 3 drum hoist.
Harris 50 ton Guy Derrick 135 ft. Boom.

RICHARD P. WALSH CO.
30 Church St. New York, N. Y.
Cortland 7-0723 Cable: RICHWALSH

PORTABLE SCREENING PLANT
$750.00

1—Tubular frame pit screener with Diamond 2½ deck 30"x8' vibrator screen with 4B section V-belt drive.
10-Horse 220 3 phase motor and magnetic starter. Whole unit can be moved on dump truck without dismantling. Total Price $750.00
1—5 horse Jones right angle speed reducer 90.00

GERALD ASSOCIATES, INC.
Union City, Mich.
Phone 2121 or 2951

CRUSHERS: 10x16 Rogers, 10x20 Austin W. RB 18x24 Badger, 30x42 Diamond, 30x48 Allis C. 30x42 Buchanan, 24x36 and 60x42 Farrell JAW, 25½ and 38 Kennedy. 16" and 30" Sup. McCully GYR. 2, 3, and 4' Symons Cone. 18x30 Cedar Rapids dbl. roll Crusher. 3 roll and 5 roll High Side Raymond Mills.
½ yd. Byers Drag. Osgood 200 Gas Shovel comb.
¾ yd. Speeder, Koehring 301 Gas Shovels.
1 yd. Lorain 60 Gas, Bucyrus D2 Diesel Shovels.
1 yd. Bucyrus 20B Diesel Dragline.
1½ yd. Northwest 6 Gas Shovel and Drag.
1¼ yd. Marion 450 Elec. Shovel 440V.
1½ yd. P&H 650, BE 37B Gas Shovels.
2 yd. BE 50B and 52B, Lorain 820 Diesel Shovels.
1 to 3 yd. Cableway Outfits, elec. gas and diesel.
300 HP FM and Venn Severin Diesel Gen. Sets 440V.
2—180 HP FM VA Diesel Gen. Sets 440V.
NEW Universal Vibrating Screens; "Sturdee" Scales.
21 ton Porter and Vulcan Saddle Tank std. ga. steam Loco.

MID-CONTINENT EQUIPMENT CO., INC.
6677 Washington Ave. St. Louis 5, Mo.
Pa. 2290

FOR SALE

Crescent Scraper Bucket, 1½ Yard, No. D-3566 Never Used, Excellent Condition.
Stedman 30" Single Cage Disintegrator with motor and controls. Good Condition.
Allis-Chalmers 6" Superior McCully Fine Reduction Crusher with motor and controls. Concaves and crushing head recently renewed.
For further information contact:

BASIC CONSTRUCTION MATERIALS
Chillicothe, Ohio

FOR SALE

AIR COMPRESSORS
BELTED: 355, 528, 676, 1000, 1300 and 1570 Ft
ELECTRIC: 676, 807, 1302, 1722, 2260, 3000, 3700 and 5000 Ft. Cap.
DIESEL: 403, 807, and 1000 Ft.
PORTABLE GAS: 110, 160, 220, 310 and 540 Ft.

CLAMSHELL BUCKETS and SKIPS and GRAPPLES
7—¾, 1, 2 and 4 Yd. Clamshells
Owen R A & H Stone Grapples
18 Steel Skips 6¾x6x2½
5 Ton Bucyrus Rock Grabs

CRANES—DRAGLINES—SHOVELS
40 Ton American 100 Ft. Boom Whirley Crane
1—1⅜ Yd. B.E. 42B Steam Shovel
2—25 and 35 Ton American Loco. Cranes
2—1 Yd., 3 Yd., and 4 Yd. Elec. Shovels
17 Yd. Cap. Bucyrus Erie Elec. Shovel
2—10 Yd. Cap. Marion Elec. Shovels
8 Yd. Cap. Marion Elec. Shovel
7 Yd. Cap. Marion Diesel Dragline
6 Yd. Cap. B.E. Monighan Diesel Dragline
5 Yd. Cap. Marion Elec. Shovel
4 Yd. Cap. Marion Diesel Shovel
5 Steam Shovels—3½, 5, 6 and 8 Yd.

DUMP CARS
46—Koppel, 1¼ Yd. 24 and 30 in. Ga., V shaped
15—2 Yd., 3 Yd., 4 Yd., 6 Yd., 12 Yd., 36 in. Ga.
20—Std. Ga. 12 Yd., 16 Yd., 20 Yd., and 30 Yd. Cap.

BOX, FLAT and TANK CARS
9—50 ton Std. ga. heavy duty flat cars
30—8000 gal. cap. tank cars
30—40 ton std. ga. box cars

HOISTING ENGINES
Gas: 15, 30, 60, 100 and 120 HP
Electric: 30, 52, 90, 100 and 150 HP
Steam: 6¼x8, 7x10, 8¼x10, 10x12, 12x24

DIESEL UNITS
80, 120, 180, and 200 HP F.M. Engines
600 HP Price Rathbun, 300 RPM
200 HP Ingersoll Rand, 600 RPM
200 KW and 30 KW, 3/60/550 Units
75 KW and 50 KW, 3/60/240 Units
1200 KW—6 Unit F.M. Plant, 3/60/2300

BALL, ROD AND TUBE MILLS
3'x8", 3'x24", 6'x22" and 6'x48" Hardinge
Conical Ball Mills
4'x4' A-C Ball Mill
4x16 and 5½x20 Smidth, 6x18 Bonnot and 5x23 Allis Chalmers Tube Mills
7x18 A-C Dry Compeb Mill
2x6, 3x8, 4x8, and 7x16 Marcy and Hardinge Rod Mills

PULVERIZERS
2 Roll Raymond High Side with Whizzer
Riley, B & W, Strong Scott and Whiting Coal Pulverizers
No. 50 Raymond Imp.
No. 1½ Sturtevant Ring Roll
4 Roll Low Side Raymond

STEEL STORAGE TANKS
1,000 Gal., 15,000 Gal., and 20,000 Gal. Cap.
2—74,000 Bbl. and 3—10,000 Bbl. Cap.

SEPARATORS and COLLECTORS
3—8 ft., 10 ft. and 14 ft. Gayco

JAW CRUSHERS
6x20, 7x12, 8x10, 8x12, 9x16, 9x36, 10x16, 10x26, 10x30, 10x36, 10x40, 11x18, 12x18, 12x24, 12x26, 13x24, 13x30, 14x20, 15x24, 15x36, 18x30, 18x36, 24x36, 28x36, 30x42, 36x42, 40x48, 42x66, 60x81.

REDUCTION TYPE CONE CRUSHERS
322R Allis-Chalmers
24"x36" Telsmith Gyrosphere
5½ Ft. Symons Short Head
1'-8" and 2'-4" Traylor TY
5", 7" and 10" Newhouse
19-S, 37-S and 49 Kennedy

PRIMARY TYPE—GYRATORY CRUSHERS
10B and 13B Telsmith
14", 16", 20" and 26" Traylor Bulldogs
16", 20" and 30" McCully
Type K, Austin, etc. No. 4, 5, 7½, 9 and 12

ROTARY DRYERS and KILNS
4x20 "XA" and 6x35 "XB" Ruggles Coles
24x30 and 6x55 Christie
Single Shell 4x30, 5x35, 5x50, 5½x40, 6x20, 6x28, 6x35 and 7x28

STEEL DERRICKS
GUY: 8 Ton 85 ft. Boom, 15 Ton 100 ft. Boom, 20 Ton 115 ft. Boom, 50 Ton 100 Ft. Boom
STIFF LEG: 5 Ton 70 ft. Boom, 15 Ton 100 ft. Boom, 25 Ton 100 ft. Boom, 75 Ton 135 ft. Boom

LOCOMOTIVES
GASOLINE: 3 Ton, 5 Ton, 8 Ton, 12, 14 and 30 Ton
STEAM: 9 Ton, 20 Ton, 40 Ton, 60 Ton, and 80 Ton
ELECTRIC: 2 Ton, 5 Ton, 8 Ton, 40 Ton
DIESEL: 15 Ton, 30 Ton, 65 Ton and 80 Ton

SCREENS
VIBRATING: 3x6, 12x8, 3x8, 3x5, 4x5, 4x8, 4x10, 48x72 and 4x12, 1, 2 and 3 Deck
REVOLVING: 3x12, 3x16, 3½x18, 3x24, 4x16, 4x20, 4x33, 4x24, 5x30, 3x20, 6x20

R. C. STANHOPE, INC.
Complete Plants Bought and Sold
60 E. 42nd St., New York 17, N. Y.

AIR SEPARATOR: Sturtevant 6 ft., V-belt drive.
COMPRESSOR: Schramm 420 electric, capacity 450 CFM, 75 H.P. motor, V belt drive.
DRAGLINE: 4 yd. capacity, 110' boom, 2200 volt A.C.
DRAGLINE BUCKET: Page 4 yd., medium duty, complete.
DRILLS:
1—Bucyrus Erie 29T with 9" bits and tools, gasoline powered. NEW condition. 1—Diesel powered.
1—Bucyrus Erie 42T, diesel powered, with 9" bits and tools.
2—Loomis Clipper Blast Hole Drills with 6" bits and tools, gasoline powered.
1—Bucyrus Erie model 12 Bit Dresser for 9" and 6" bits, complete.
BOILER: 100 H.P., 10 lbs. pressure, complete with oil burner and control equipment. Portable.
PUMP: Worthington 40 H.P. steam driven Centrifugal Pump, 300 lbs. steam pressure, 3550 RPM with steam regulator; complete in new condition.
GOODRICH SUPER LONG LIFE CORD CONVEYOR BELT (NEW):
1—Piece 1014 ft.
1—Piece 1017 ft.
1—Piece 268 ft.
42" wide, 6 ply, 42 oz. duck, 7/32" top cover, 1/16" bottom cover, on original reels. ALL NEW NATURAL RUBBER; with or without mechanical parts.
MOBILE CRANES:
1—Lima Paymaster mounted on 10 wheel, 6 cylinder Mack, all dual drive; new motor in truck; crane arranged with 80' boom and 11b. will lift 18 tons.
1—Byers Truck Crane mounted on 4 cylinder AC Mack truck, 4 wheel, dual drive.
CRAWLER CRANE:
1—Industrial Brownhoist Crawler Crane, built 1942, steam operated, 20 ton capacity, 50' boom, 160 lb. code boiler.
GYRATORY CRUSHERS:
1—42" complete with motor and drive.
1—Allis-Chalmers 9-K; 1—Telsmith 16-B, all steel 15" opening.
JAW CRUSHER: All sizes 4x6 to 48x60.
REDUCTION CRUSHERS: Traylor type TZ, size 36", Kennedy model 37 with motor integral; Symons 4 ft. Cone; Telsmith 32-B complete with V-belt pulley; Allis-Chalmers type R322 fine reduction Crusher.
ROLL CRUSHERS: Jeffrey 18x24 double roll crusher for coal, coke, cinders, etc. New Holland 14"x16"; Allis-Chalmers 54x20, NEW condition.
PULVERIZERS:
Jeffrey 24x18 Swing Hammer Pulverizer, shop No. 1159.
Hardinge Conical Ball Mill 6'x22", manganese steel lined, Herringbone gears, with motor and V-belt drive.
Raymond Mill, 4 roller, low side.
KILNS, COOLERS, DRYERS:
1—Single shell 36" x 20 ft. complete with drive, burner; no motor.
1—5'x50' brick lined Kiln.
DERRICK HOIST: National 3 drum, 80 H.P., shop No. 4626, with 15 H.P. separate electric swinger, 3 phase, 60 cycle, 220-440 volt
MINE HOISTS: Single and double drum, 150 H.P., 250 H.P., 400 H.P., 600 H.P., 800 H.P., 900 H.P., and 1000 H.P. All complete with motors and control equipment.
LOCOMOTIVES: 1—Plymouth and 1—Whitcomb 30 ton, standard gauge, gasoline, air brakes.

A. J. O'NEILL
Lansdowne Theatre Building
LANSDOWNE, PA.
Phila. Phones: Madison 8300-8301

FOR SALE

1—Fairbanks Morse single drum hoist. Price .....$ 200.00
1—Gilson No. 12 Pulverizer complete with a 30 H.P. electric motor and liners. Price 500.00
1—Universal jaw crusher 7x12 complete with 10 H.P. electric motor and starter. Price 500.00
1—International D-40 truck engine with head, rebuilt like new. Price 400.00
1—Vapofier No. 10 with max. capy. of 2 million B.T.U. per hour complete with blower, motor and motor starter. Used only 3 months, like new. Price 1,000.00

ROCKWELL LIME COMPANY
R.F.D. No. 5
Manitowoc, Wisconsin

FOR SALE

20 Tons Belgian flint pebbles
4'x16' Tube mills (3)
1—American hammer mill with 125 HP direct connected motor
1—70 HP Marine type diesel engine, same as new
1—3-drum Bucyrus steam hoist
All steel dredge boats, scows, tug boats and pug boats
Steel bins, hoppers and tanks
Fuller-Kinyon pump (6")
6'x50' Manitowoc dryer
1 yd. and 1¼ yd. clam-shell buckets
4 wood hoppers lined with steel
Steel elevators
B & W coal pulverizer
Steel buildings: 20'x100'x10', 75' x350' and 50'x350'
Two industrial properties in desirable location, water power, railroad and highway, also good labor conditions.

OLLIE E. LAWRENCE
Box 688
Quincy, Michigan

MINE AND SLOPE HOISTS
1—20,000 lb. Vulcan Dbl Drum AC
1—35,000 lb. Nordberg Sgl Drum AC
1—10,000 lb. Cap. Nordberg Sgl Drum AC
1—17,000 lb. Ottumwa Sgl Drum AC
1—10,000 lb. Lidgerwood Sgl Drum AC
1—16,000 lb. Sgl Drum Lidgerwood AC
1—15,000 lb. Wash. Iron Wks Sgl Drum AC
1—30,000 lb. Allis-Chalmers Sgl Drum AC
1—20,000 lb. Dbl Munday w/o motor

CRUSHERS
2—No. 800B Pitman, new
1—12x16 Eagle Dbl Roll
1—3B American pulverizer
1—30x54 McNally Pitts. Sgl Roll
1—10x20 Universal Sgl Roll portable
1—24x20 Penn. Sgl. Roll
1—No. 75 Marcy Ball Mill
1—24x20 Dixie Hammer Mill
1—40x22 Pioneer Dbl Roll with Hopper

DIESEL GENERATING EQUIPMENT
Units, 200 to 900 KW with diesel engines

HAWKINS & CO.
128 So. Michigan Ave., Chicago 3, Ill.
Telephone Harrison 7-0725

FOR SALE—DIESELS

1—300KW 400 RPM Buckeye Generator Set.
1—200KW 400 RPM Buckeye Generator Set.
1—100KW 400 RPM Buckeye Generator Set.

Write ***Wire*** ***Phone***

ROBERT L. NEISWANDER
P.O. Box 554 **Lima, Ohio**
Phone 4-2867

DEPENDABLE USED MACHINES
Special—Bay City Model 30, ½ yd. high lift Diesel shovel, rebuilt

Angledozer on Cat 50	Link Belt 2½ yd. dragline	Morris 10" gravel pump
Bulldozer on Cat RD-7	Byers ¾ yd. dragline	3x10, 2-deck screen
24x40 port. conveyor	Pioneer 42"x14' feeder	1-4 with Hough shovel
Browning 1¼ yd. crane	Eagle 12x24 hammermill	Unit ⅜ yd. shovel
Lorain ½ yd. crane	B-G Model 522 Loader	Universal truck crane

All above equipment reconditioned in our own plant.

3520 W. 51st St. **TRACTOR AND EQUIPMENT CO.** **Chicago 32, Ill.**

FOR SALE

16" Type C Manierre Box Car Loader, complete with all electrical equipment including 440 V., 3 phase, 60 cycle Motor. Price, $2,000 f.o.b. Riverton, Virginia.

RIVERTON LIME & STONE CO., INC.
Riverton, Va.

ALSO SEE READY-MIXED CONCRETE AND CONCRETE PRODUCTS EQUIPMENT CLASSIFIED ADVERTISING IN CONCRETE PRODUCTS SECTION

FOR SALE

3' Symons Cone Crusher
No. 4 Williams Hammermill
No. 30 Williams Slugger
LaPlante Choate 5½ Ton Rooter
LeTourneau Angledozer Blade 7M D7
Brooks Load Lugger
⅜ CY Speeder Shovel and Clam Attachments
FWD Dump Trucks—8 Cy

Memphis Stone & Gravel Co.
1825-29 Exchange Bldg.
Memphis 3, Tenn.

FOR SALE

One—16A Telsmith Primary Crusher, capacity 130 tons per hr. to 3" with 75 HP. motor.

One—36" Model 8B, Telsmith Gyratory Crusher with special heavy concaves, 25 HP ball bearing motor, magnetic starter, V-pulleys and V-Belts. This crusher bought new and used less than two months. Will sell at bargain price. Under factory guarantee.

One—15x24" Universal Jaw Crusher with or without 50 HP motor and V-Flat Drive.

One—19" Dings Magnetic Pulley with 2 KW MG set. Like new.

One—40"x18' Bodinson Trommel Screen with CI heads, beveled gear drive.

One—110 ton capacity Stephens Adams Reciprocating Feeder, Model SA.

One—37-½ KVA, 3 phase, 440/220/110 volt Generator. Direct Connected to 65 HP International Model UD14 diesel engine.

Pacific Machinery & Engineering Co.
420 Market Street
San Francisco 11, Calif.

FOR SALE

COMPLETE 1½ CU. YD. SAUERMAN SLACKLINE CABLEWAY

Two 1½ yd. Sauerman buckets
70 ft. steel self-aligning mast
150 HP Thomas Hoist
220 V. 60 cycle 3 phase
1200 ft. 1½" track cable
Mast complete with all guy equipment.

1400 FT. OF DOUBLE RR TRACK

With crossover—85 lb. steel

All equipment in excellent condition. Relocation of Federal Highway has made necessary the abandonment of gravel deposit.

WAUKESHA WASHED SAND & GRAVEL CO.
Phone: Oconomowoc 636
Okauchee, Wisconsin

FOR SALE

Cedar Rapids—two unit mobile crushing plant for crushing gravel, rock and coal, new, used only 200 hours. Immediate delivery.

JAMES C. MILLER STONE COMPANY
Taylor County Bank Bldg.
Campbellsville, Kentucky

for IMMEDIATE DELIVERY *of* RUBBER PRODUCTS

CALL WIRE WRITE **CARLYLE**
THE RUBBER HEADQUARTERS

CONVEYOR BELTING, TRANSMISSION BELTING, ELEVATOR BELTING, FIRE, WATER, AIR, STEAM, SUCTION and WELDING HOSE.

CARLYLE RUBBER PRODUCTS ARE NEW, GUARANTEED & LOW PRICED

NEW GUARANTEED

CONVEYOR BELTING

ABRASIVE RESISTANT COVERS

Width	Ply	Top-Bottom Covers	Width	Ply	Top-Bottom Covers
48"	8	1/8" — 1/16"	24"	4	1/8" — 1/32"
42"	5	1/8" — 1/16"	20"	5	1/8" — 1/32"
36"	6	1/8" — 1/16"	20"	4	1/8" — 1/32"
30"	6	1/8" — 1/16"	18"	4	1/8" — 1/32"
30"	5	1/8" — 1/16"	16"	4	1/8" — 1/32"
26"	5	1/8" — 1/32"	14"	4	1/16" — 1/32"
24"	5	1/8" — 1/32"	12"	4	1/16" — 1/32"

Inquire For Prices — Mention Size and Lengths

TRANSMISSION BELTING

HEAVY-DUTY FRICTION SURFACE

	Width	Ply	Width	Ply	Width	Ply
Inquire For Prices — Mention Size and Lengths.	18"	6	10"	6	6"	5
	16"	6	10"	5	5"	5
	14"	6	8"	6	4"	5
	12"	6	8"	5	4"	4
	12"	5	6"	6	3"	4

ENDLESS "V" BELTS

"A" Width All Sizes —
"B" Width All Sizes —
"C" Width All Sizes —
"D" Width All Sizes —
"E" Width All Sizes —

Sold in Matched Sets.
Inquire For Prices — Mention Size and Lengths.

SPECIAL OFFER . . . HEAVY DUTY RUBBER HOSE

FIRE HOSE

APPROVED SPECIFICATION HOSE EACH LENGTH WITH COUPLINGS ATTACHED

I.D. Size	Length	Per Length
2½"	50 feet	$28.00
	25 "	16.00
2"	50 "	23.00
	25 "	13.00
1½"	50 "	20.00
	25 "	11.00

Specify Thread On Couplings

AIR HOSE

I.D. Size	Length	per Length	Universal Couplings
½"	25 feet	$5.00	$1.50 Pair
	50 "	10.00	1.50 Pair
¾"	25 "	7.50	1.50 Pair
	50 "	15.00	1.50 Pair
1"	25 "	10.00	1.50 Pair
	50 "	20.00	1.50 Pair

LARGER SIZES ALSO AVAILABLE
All Prices—Net — F.O.B. New York

WATER HOSE

I.D. Size	Length	per Length	I.D. Size	Length	per Length
¾"	25 feet	$4.25		35 feet	$10.50
	50 "	8.00		40 "	12.00
1"	25 "	6.25		50 "	15.00
	50 "	12.50	1½"	25 "	10.00
1¼"	25 "	7.50		35 "	14.00
				50 "	20.00

Each Length with Couplings Attached

CARLYLE RUBBER CO., Inc.

62-66 PARK PLACE, NEW YORK 7, N. Y. Phone: BArclay 7-9793

FOR SALE

1—500 CFC Worthington Blue Brute Compressor
3—Mine Cars 16 and 20 cu. ft. 24" Gauge
1—Gardner Denver Air Hoist Model HB
6—Gardner Denver Drifters Model CF89
2—7½ HP 8" Champion Blowers
680 ft. 8" Ventilating Pipe
1—Air Receiver
1—4" Bull Hose 50 ft.
1—Double Deck Jumbo Gantry for 30'x 22' Oval Tunnel Opening
2400 ft. 1¼" Round Lug Type Timken Drill Steel 3' to 17' Lengths

HENRY THYGESEN & CO.
Box 876 Albuquerque, N. M.

FOR SALE

PUMP, Cook Deep Well Turbine, 40 H.P. 3-phase motor; 52" setting, 3 stage 12" pump.

DIESEL GENERATOR Set, Buda 6 DTG 468, AC 120/208 volts, 4 wire, complete with control panel.

SHOVEL, Link Belt LS85, ¾ yard, Caterpillar D8800 Engine, light use since new 1946, Excellent Condition.

J. MARSHALL THOMPSON
DeSoto Mo.
Telephone 263

Shipment From Stock

STEEL STORAGE BINS—HOPPER TYPE

1—66' long, 16' wide, 10'6" high straight side, 6'6" height of hopper, 6 compartments.

1—11' long, 8'9" wide, 10" high straight side, 6'6" height of hopper, 2 compartments.

1—38' long, 12' wide, 7' high straight side, 6' height of hopper, 8 compartments.

3—34' long 12' wide, 6'6" high straight side, 9' height of hopper, 4 compartments.

1—22' long, 11'6" wide, 7'3" high straight side, 6'3" height of hopper, 4 compartments.

STACKS—3—5'3" dia. x 110' high, ¾" and 5/16" plate with reinforcing bands every 10'8".

FULLER KINYON SYSTEM—Type H5 Pump with Motor and Feed Hopper, hi-low control system, 250'4" pipe and 8-3 way motorized valves.

BELT CONVEYORS—1—Barber Greene Co. 24", 18'0" center, troughing type. 1—24" Flat, 30' centers and drive.

MILLS—Stedman, 4-cage, 36" with motors.
Mikro Pulverizer No. 2 belt driven.
Day 3-roll 16"x40" Ink Mill.
Raymond 3-roll, low side.

PUMPS—Frederick Iron & Steel Co. 8" DSV-SM 2500 GPM, 150' H., nickel iron casing, stainless steel trim, comp with 125 HP TEFC motor and Control Panel.
1—Stokes Hi-Vacuum, 100 cu. ft., V-Belt driven.

WELDERS—300 and 400 amps., G.E. and Hobart, rebuilt and guaranteed.

CRUSHERS—Jeffrey Swing Hammer Pulverizer, 36"x 24", Type A-2, 50 HP TEFC Motor.
1-UNUSED 2-roll spiked Bartlett&Snow.
1-Gruendler, Jaw, 10"x 16".

OLIVER CONTINUOUS FILTER—5'4" dia. 6' face, serial No. 8823, complete with all accessories.

AUTOCLAVE—Vert. jacketed, stainless steel lined, 6'x8'x11/16" shell, 40 lb. W.P., ASME U-69.

ELEVATORS-BUCKET—1—48' centers, single 825 chain, 14"x7", MI Buckets, steel encased.
1—68' centers, single 825 chain, 10"x 6" MI Buckets, steel encased.

TANKS—5000 gals. hor., 6'1"x24'x⅜", 5000 gals. hor., 6'x23'7"x5/16" (NEW) Blow-off, 3300 gals. vert., 6'6"x10', 5/16" ASME Code.
4000 gals. hor., 6'x20'x5/16" (2 NEW).
2300 gals. hor., 5'x15'x½".
750 gals. vert., 5'x8'x½" open.

Heat and Power Co., inc.

70 PINE STREET · DIGBY 8-0373 · NEW YORK 5, N. Y.

CINDER CRUSHERS
VIBRATING SCREENS
SCALES and CONVEYORS
FEEDERS
BALL BEARING IDLERS

Prompt Shipment — Reduced Prices

3-roll Idlers: 14" belt width	$21.00		
16" belt	$21.50	18" belt	22.30
24" belt	23.40	30" belt	24.90
36" belt	26.00	42" belt	27.30
48" belt width	$28.50		
1-roll Idlers: 24" belt width	$23.35		
30" belt	$24.90	36" belt	26.00
42" belt	27.00	48" belt	28.15
Belt Conveyors	$ 665.00		
Portable Bag & Block Piler	625.00		
Reciprocating Feeders	600.00		
Cinder Crusher—10 to 20 ton capacity per hour	$ 474.00		
Large Cinder Crusher: 25 to 50 ton capacity per hour	1074.00		
20 ton truck scales	516.00		
15 ton truck scales	450.00		
Batching Scales	345.00		
Vibrating screens, 2' to 5' wide many lengths, 1 to 5 decks. All with screen cloth or plates to customers' specifications. Priced from	395.00		

BONDED SCALE & MACHINE COMPANY
128 Bellview **Columbus 7, Ohio**
Phone: Garfield 2186; University 2832, Evenings

RAILS

NEW AND RELAYING
Track Accessories
- Prompt Shipments
- Fabricating Facilities
- Trackage Specialists

From 5 Warehouses

L. B. FOSTER CO.
NEW YORK · CHICAGO · HOUSTON
PITTSBURGH · SAN FRANCISCO
ADDRESS THE FOSTER OFFICE NEAREST YOU!

FOR SALE

2—Vulcan 9'x160', 8'x125' Rotary Kilns, ⅝" shells, full motor drives.
2—Allis Chalmers 9'x80' Rotary Kilns, ⅝" shells, full motor drives.
3—Rotary Dryers 6'x35', 5'x40', 3'x45'.
15—Chain and Belt Bucket Elevators, steel housings, 25 to 75' centers.
7—Tyler Hummer 4'x5', 3'x5' Vibrating Screens, thermionic units.
1—"Jay Bee" 2UX Hammer Mill, 30 H.P. motor.
20—Belt Conveyors, Flat and Troughing Type, all sizes.

Send for News Flash

BRILL EQUIPMENT COMPANY
2401 Third Ave. New York 51, N. Y.

REDUCTION CRUSHER

Telsmith, rebuilt, model 32B. Capacity 20-24 tons ⅞" product. Max. size feed 5". Complete with receiving hopper, V-belt drive, oil coolant tank.

IMPACT CRUSHER

Cedar Rapids, rebuilt, Kubit size 3. Max. size feed 3". 4 and 6 hammer rotor. Capacity 30-50 tons per hr. Ideal for Limestone.

COAST EQUIPMENT CO.
948 Bryant St. San Francisco, Calif.

FOR SALE

1—78x18 HRT Boiler ASME 200-lb. pressure with stoker.

2—135 HP Murphy Diesel engines direct connected to 85 KW 3 ph., 60 cy., 240 volt generators.

2—200 HP Economic fire box boilers 125-lb. allowable pressure. Built 1933.

Brew, Woltman & Co., Inc.
50 Church St. New York 7, N. Y.

COMPLETE BELT CONVEYORS

BELTING • IDLERS • HEAVY DUTY PAN FEEDERS

Immediate Delivery WRITE FOR LITERATURE *Reduced Prices*

FRANK A. KREMSER AND SONS, INC.
3435-45 NORTH 5th STREET, PHILADELPHIA 40, PENNA.
At Fifth Street Where The World Goes By On The Pennsylvania Railroad • REgent 9-7272 " 9-7324

ALSO SEE READY-MIXED CONCRETE AND CONCRETE PRODUCTS EQUIPMENT CLASSIFIED ADVERTISING IN CONCRETE PRODUCTS SECTION

CRUSHERS

GYRATORY: 20" Super. McCully; 36" Allis-Chalmers; also Nos. 12, 10, 9, 8, 7½, 6, 5, & 4
JAW TYPE: 24x36, 25x40, 22x50, 30x42, 42x48, and smaller sizes down to 7"x9".
REDUCTION TY.: 4' & 3' Symons Cone; Nos. 19, 25, 27 & 38 Kennedy; 36" Traylor TZ, 1'6" & 2'6" TY; No. 36 Telsmith Gyrasphere; 7 & 10" Newhouse; Stedman 30 & 36" Imp. Type.
ROLLS: Allis-Chalmers 72x30, 54x24, 54x30, 40x15 & 18x10. Pioneer 18x30. Universal 16x24. New Holland 24x16 & 16x16; McLanahan 30"x60", 18x24 & 18x30 Single Roll. Also others.
HAMMERMILLS: Williams Nos. 2, 3, 4 & 6; Jay No. 40 & No. 70; Gruendler 2XB & 3XB; Dixie 2024 & 3650.
MILLS: Hardinge 3'x8", 6'x22", 6'x3', 8'x3' & 8'x4'; Kennedy 4x8, 5x6, 5x11; Marcy 4x5, 6x14; Smidth 16B Tube Mills; Raymond 4 & 5 Roller Mills; Bonnot, Fuller, Sturtevant & others.
CRUSHING PLANTS: 25x40 Cedar Rapids Portable, Diesel Power. Others portable & stationary.
BINS & BATCHERS: 70 & 150 yd. 3-compt. Etc.
TRUCKS: Euclids, FWD, Internationals, Etc.
SHOVELS: 80-D Northwest 2½ yd. combination Link Belt Speeder K-580, 3 yd., and others.
DRAGLINES: 6 Yd. Walker, 145' boom, Diesel Lorain Model 46-A Crane-Dragline, Diesel.

MISCELLANEOUS ITEMS

Barges, Bins, Buckets, Boilers, Cableways, Cars, Compressors, Conveyors, Cranes, Dryer, Derricks, Elevators, Excavators, Generators, Hoists, Kiln, Draglines, Drag Scrapers, Dredges, Drills, Engines, Locomotives, Loaders, Motors, Pipe, Pumps, Rail, Scales, Screens, Shackles, Shovels, Tanks, Trucks, Tractors, Etc., in many sizes, types and makes at low prices. (I have equipment at many points in the United States and Canada. What you need may be near your plant.)

MARIETTA ALEX T. McLEOD KANSAS

¾ yd. Byers Bearcat Jr. crane
1¼ yd. No. West comb. pullshovel-crane
20 ton Vulcan gas locomotive
25 ton Browning loco. crane 50' boom
Owen clamshell buckets, ½, ¾, 1¼ yd.
160# VT boiler 54" x 8' 5" stamped Nat. Bd.
Barber-Greene 82A Bucket Loader
50 HP Clyde electric hoist, single drum
50 ton Baldwin loco. oil fired ST
45 ton Whitcomb diesel electric loco.
20 ton Whitcomb gas loco.
½ yd. shovel attach. for Bucy-Erie 15B
⅝ yd. shovel attach. for Byers 71W
Shovel attach. for 41 Bucy-Erie

J. T. WALSH
Brisbane Bldg. Buffalo 3, N. Y.

BARGAINS IN MINING EQUIPMENT

100 KW diesel gen. set.
100 KW MG set.
450 hp mine hoist S. R. 2,200 volts, motor and control.
300 hp mine hoist.
150 hp hoist with or without motor.
150 hoist with 550 volts motor.
Westinghouse bar steel 6 ton, 42" gauge locomotive—904-C, ball brgs., with extra armature.
2—Jeffrey 4-ton locomotives.
West, bar steel, same as above, with horiz. recl.
CR-2 ac coal cutter with 36" gauge trucks and cable, 3 phase, 229 volts, 6½ ft. bar.
Several 24-B Jeffrey machines, both ac and dc.
2—8 AB ac Goodman coal cutters.
2—8bl. ac Goodman coal cutters.
Bargains in dc motors—250 volts from 3 to 75 hp.
Bargains in ac motors. Any kind or size.
Also new dc start rs. 3 to 75 hp.
1,000 amp. auto. reclosing breaker.
20 hp ac pump on base, 3" discharge—dc motor, 1750 rpm.
60 hp ac motor centrif. pump, 250 ft. hd., 750 GPM.
22-hp GE motor and pump on base—5" discharge.
30 hp ac motor centrifugal pump 350 GPM, 250 ft. head.
112-AA dc Goodman coal cutter, 5½ ft. bar.
2—112 GS ac Goodman coal cutters.
2—50 ton coal washer ttgrs.
2—5 hp mobile hoists with ac or dc motor.
2—572 dc CP coal drills.
5—572 ac coal drills.
1—8bl Goodman sta-bine truck with rcl. 36" ga.
4000 ft. bare coop 2 wire—good cond. size No. 4.
Complete coal mine with washer all ready to operate.

EMERSON ELECTRIC COMPANY
711 North 9th St. Birmingham 4, Ala.

ANCO TILT-TRUCK

HANDLES TWICE THE BAGS IN HALF THE TIME. WRITE TODAY FOR FOLDER

ANTHONY TRUCK CO.
1035 Monroe St. Paducah, Ky.

FOR SALE

50 ton Whitcomb diesel elec. locomotive. New 1943. Std. Ga.

1¾ yd. Lima 701 diesel dragline and shovel. 60 ft. bm. Good condition.

¾ yd. Lorain 40 gas shovel-crane-dragline. New 1941.

600 HP Fairbanks Morse 400 KW Model 33 diesel generator set.

Mississippi Valley Equipment Company
513 Locust St. St. Louis 1, Mo.

FOR SALE

2 Gilbert revolving screens. Cap. 50 T.P.H. each. Complete with jack shaft, sprockets, chains, bearings. Also extra screens.

Haiss Bucket Loader. Model 75C. New June 1946. Gas engine. Cap. 3 yds. Per M. We have overhauled this machine in our shop and it is in excellent condition.

SPICER GRAVEL CO.
Marseilles, Illinois

CRUSHERS, ETC.

1—18"x36" Farrel—Type "B" Crusher—Not Rebuilt.
1—No. 4½ Champion (No. 10 Beaumont) Jaw Crusher, 10"x20" opening.
2—No. 4 Champion Jaw Crushers, 9"x15" opening.
2—No. 6 Traylor Gyratory Crushers with T.Z. head.
1—No. 4½ Traylor Gyratory Crusher.
1—Jeffrey Swing Hammer Mill, Type A, 24"x18".
1—Jeffrey Swing Hammer Mill, Type A, 30"x24".
1—18" LINK-BELT APRON CONVEYOR—9" pitch, 27' centers, like new.
1—6" Morris Sand Pump, D.C. to gasoline engine.
1—6" Morris Sand Pump with coupling on bed for motor mount.

JOHNSON & HOEHLER, INC.
P.O. Box 102 Lansdowne, Pa.

FOR SALE

One Symons Screen (used) 3 ft. x 8 ft.—double deck. Completely covered. Perfect working order. $2,000.00. May be seen at Cairo, New York.

COLD MIX, INC.
Water Street
White Plains, New York

CONVEYORS

42"x50' Trough Belt Conveyor
36"x180' New Trough Belt Conveyor
30"x20" Link-Belt "No-Leak" Apron Feeder
30"x8' New Link-Belt Apron Feeder
30" Trough Belt Conveyor Equipment
24"x100' and 150' Trough Belt Conveyors
24"x250' Trough Belt Conveyor
24"x12' Screw Paddle Gravel Washer
24" and 20" Conveyor Belt Trippers
20"x150' Flat Belt Conveyor
18"x61½' Jeffrey Apron Feeder
18"x12' Jeffrey Vibru-Dryer Feeder
16"x7' Telsmith Plate Feeder
16" Trough Belt Conveyor
15"x150' Single-Strand Flight Conveyor
4"x105' New Standard Wood Apron Conveyor
6" to 18" wide Gravity Roller Conveyors
6" to 16" diameter Screw Conveyors
New and Used Conveyor Belt
Fuller and Raymond Feeders
2 Westinghouse 3-phase 1-hp. Vibrators
Jeffrey Traylor Feeders, No. 3 and No. 4
Syntron Vibrator Feeder, type FM-2-A-65
Syntron Vibrator, model V-200

BUCKET ELEVATORS

New and Used Belt, Buckets and Sprockets
4"x14" Enclosed Bucket Elevator, new
6" to 16" Bucket Elevators on Belt or Chain Enclosed, Spaced and Continuous type Elevators
Double-Strand 12" Bucket Elevators
12"x65' Inclined Spaced Bucket Elevator
16"x22' Enclosed Bucket Elevator, new
14" and 16" Enclosed Bucket Elevators, 57' c. 800' of No. 825 Elevator Chain with 12" Buckets
New Jeffrey No. 933 Thimble Steel Roller Chain
1500' of C-131 and 2000' of SC-188 Chains
200' of No. 844 Chain with 16"x8" Buckets
Chains: SS-80, H-78, 83, C-102-B, C-110, C-111, C-188, 103, 114, 488, 522, 527, 730, 822, 827, 835, 1030 and Roller Chains

CRUSHERS

10"x16"-A Farrel Jaw Crusher
10"x20"—Climax Jaw Crusher
10"x14" Farrel-Bacon Jaw Crusher, No. 3-C Manganese Jaw Plates and Peg Crusher
18"x28" 2-roll corrugated Crusher
No. 16-40 Gruendler Aristocrate Peerless Grinder
28" Hammer type Pigment Pulverizer
Type 3-D A-C Gyratory Reduction Crusher
Type R-322 A-C Gyratory Reduction Crusher
Laboratory Grinders: Kent and Stokes
American Pulverizer
Little Giant Hammermill, 3-hp. 4" Blower

SCREENS

1½'x3' 2-deck Niagara Vibrating Screen
2'x5' 2-deck Jigger Vibrating Screen
2'x5' 1-deck Tyler Hummer Enclosed Screens
3'x6' 1-deck Deister Plat-O Vibr. Screen
4'x8' 1-deck Tyler type 400 Vibr. Screen
3½'x6' and 3½'x8' New Universal Vibr. Screens
New Mechanism for 4' Link-Belt P-D Screen
Selected Sizes Vibrating Screen Cloth Sections

MISCELLANEOUS

60 Selected Sizes of Gear Reducers to 75 hp.
Gear Motors, Motors and Engines
14"x12' Link-Belt Paddle Mixer
No. 5 McKiernan-Terry Sheeting Hammer
200-amp. Electric Transformer Welder
2-drum Air Hoist and 1-3 drum Hoists
2-drum Ldg. Electric Hoist, 50-hp Swinger
1½-yard Lakewood Clamshell Material Buckets
20' span Maris 2-Motor Traveling Crane, 10-ton
Selected sizes of Magnetic Pulleys

G. A. UNVERZAGT & SONS, INC.
136 Colt St. Irvington 11, N. J.

FOR SALE

Two ME650 Murphy Diesel power units. One used 6 months and one used 90 days. Both rebuilt and complete with clutch, sheave, etc.

GEORGE BAKER
Lockwood, Missouri

Detach and Send to ROCK PRODUCTS, 309 West Jackson Blvd., Chicago 6, Illinois

FOR SALE

The services of 14,001 salesmen all with 51 years experience selling your machinery to the producers in the non-metallic minerals field.

Salary: 1 to 3 inches
$8 an inch
4 to 8 inches
$7.75 an inch
9 to 14 inches
$7.50 an inch

Gurantee—to call on 27% more potential buyers than anyone else serving the industry.

O.K. ROCK PRODUCTS

Please put your 14,001 salesmen to work for me by placing the copy below in the classified section of the next issue of ROCK PRODUCTS to occupy . . . . . inches of space

Name .....
Company .....
Address .....
City .....State .....

FOR SALE

1 Six inch sand pump. Mounted on 10x20 ft. barge powered by four cylinder Wisconsin engine. (Engine hasn't been used since it was overhauled. Includes:
250 ft. of 6 inch pipe, 7 elbows and angels; 3 short joints; and 17 barrel floats. Barge needs some calking before being used.
Price complete $2,500.00
1—Caterpillar, Size 30
1—7 ft. Hydraulic Dozer.
All in good condition.
Priced to sell $1,000.00

TYLER CEMENT TILE & SILO WORKS
Tyler — Minnesota

OWNER'S OFFERING

Subject to Prior Sale

1—52-B Bucyrus-Erie diesel Crane-Dragline-Shovel combination, including ext. $4,000 worth of new and used spare parts. Where is, as is $19,000
1—Robins Gyrex 4'x10' double-deck Vibrating Screen, Ser. GD-6514. Completely overhauled. As is, f.o.b. cars $1750
1—LeRoi 6-cyl. Model M-RX-18 gasoline Power Unit, 160 H.P., Ser. 103998, elect. starter. Excellent condition. As is, f.o.b. cars $2,500
1—Model 50 Caterpillar Tractor, Diesel, with 10' cable-operated bulldozer. Ser. 1E81. As is, f.o.b. cars. Including all spare parts on hand $2,000

Located at St. Cloud, Minn.

1—14" Superior McCully Gyratory Crusher, Ser. 8467. As is, where is, including all spare parts on hand $5,000
1—10" Superior McCully Gyratory Crusher, Ser. 8090. As is, where is, including new spare breaker head $2,500

J. L. SHIELY COMPANY
1101 N. Snelling Ave — St. Paul 4, Minn

FOR SALE

1 Dragline (American)
1 Drag Bucket (Paige) ½ yd.
1 Dunn Mixer, 6 ft.
150 C.I. pallets, 10"
1 Traylor Gyratory Crusher, 1'8"

Battle Creek Concrete Products Co.
Battle Creek, Mich.

FOR SALE

One 4 ft. x 10 ft. 2 deck Simplicity screen, used approximately 2 months in agriculture lime. Excellent condition.

DEPPE LUMBER COMPANY
300 Water St. — Baraboo, Wisconsin

FOR SALE

1 Used Marion 1¼ yd. Electric Shovel, Type 450, Serial No. 6235. This shovel recently completely re-wired; ready for immediate use.

COWAN STONE COMPANY
Cowan, Tennessee

FOR SALE

International T.D.6 Tractor with Bucyrus-Erie Bulldozer. Very good condition. Price $3200.00

CONRAD BROS.
Box 11, Bluffton, Ohio

FOR SALE

PUMP Portable gas driven on trailer, pumps 500 GPM at 300 ft. head.
PUMP 5x4 Split Case on base, pumps 500 GPM at 150 ft. head.
HOIST 50 HP Thomas Type K with 14x20" drum.

G. & W. H. CORSON, INC.
Plymouth Meeting, Pa.

FOR SALE

Two—Bucyrus Erie 32-B Crawler Shovels only—One 6 cyl. Wisc. gas Series 11361 one 6 cyl. Cummins Diesel Series 12690

K. L. DUNBAR CO.
SHARON, PA.
Box 352 — Phone 21714 or 25334

SALE OR RENT

1—MC-4 Lorain Moto Truck Crane, 1944
2—10-ton American Terry All Steel Stiff Leg Derricks
1—10-B Bucyrus Erie Shovel
1—40 Lorain Gasoline Shovel and Crane
1—205 Koehring Diesel Shovel
1—54-B Bucyrus Erie Diesel Shovel, 1945
1—8-ton Porter Std. Ga. Gasoline Loco, 1940
1—35-ton Vulcan Std. Ga. Diesel Loco, 1938
1—65-ton Whitcomb D.E. Locomotive, 1943
1—80-ton Lima Type 0-6-0 Switcher, 1944
1—15-ton Industrial Gas. Loco. Crane

B. M. WEISS COMPANY
Girard Trust Co., Bldg.Rittenhouse 6-2311
Philadelphia 2, Pa.

FOR SALE

1—4x8 triple deck New Holland inclined vibrating screen, near new, $1,000.
2—100 H.P. UD-18 Int. diesel engines. Each $1375.
1—75'x24" Iowa greaseless troughing roll channel conveyor complete with speed reducer, less belting, $1275.
1—Late style Gruendler XXB roller bearing hammer mill, absolutely perfect shape, $875.

Dillon, Sharpe & Co., Columbus Jct., Iowa

RAILS—NEW AND RELAYING
CARS—NEW AND USED—ALL TYPES

MOST ALL SECTIONS IN STOCK also spikes, bolts, frogs, and switches available. All gauges. Always in the Market to buy surplus material. Send us your inventories.

M. K. FRANK
480 Lexington Ave, New York City — Park Building Pittsburgh, Penna.
Stack Bldg., Reno, Nevada — Havana, Cuba

1—Hayward Clam Shell Bucket, 3 Cu. yd. Class E-16 Mang. equipped. Good Condition.
1—Vulcan Gas Loco. 20 Ton, 36" Gauge, 135 H.P. Climax Motor. Good Condition.
1—Vulcan Steam Loco. 20 Ton, 36 Gauge 11"x16" Cylinders. Good Condition

GLENS FALLS PORTLAND CEMENT CO.
Glens Falls, N. Y.

KG—END DUMP EUCLID TRUCK GAS. POWER EXCELLENT CONDITION PRICE $6,500.00

J. M. HAMILTON & SONS CO.
MARION, OHIO

FOR SALE

General ½ yd. Shovel, Crawler mounted, currently loading about 70 yds. per hr. In good condition, Buda gas power. Price $4,000.00.

HASBROUCK SAND & GRAVEL
TITUSVILLE, PA.

FOR SALE

1—16" Gilson Pulverizer Bucket Elevator, $800.00
1—P.D. 80 Intl. Diesel, mounted on rubber tires with following: Kato 50 KW Generator, 400'—4-3 Cond. S. Cord, Flood Lights, $4,500.00.

HECTOR CONSTRUCTION CO., INC.
BOX 107 CALEDONIA, MINN.

FOR SALE

One 3XII Gruendler Pulverizer in good condition. Price $2200.00 with rock grates and hammers. Also, Agricultural limestone grates and Smith Detachable head hammers. (One set)
We have approximately 600 Smith Detachable Hammer Heads. Price, $4.00 each.

HALL & RILEY QUARRIES
Buncetон, Mo.

FOR SALE

Stearns Clipper Stripper
Stearns Skip Loader (18 cu. ft. Cap.)
Above equipment operated for 6 mos.
Steel and Wood Bin
Elwood Parker Lift Truck (electric)

HUDSON RIVER CONCRETE PRODUCTS
Ravena, N. Y.

Marion Type 37—Electric—1⅜ yd.; Bu. Er. 37B—Comb. 1¼ yd.; Lima—1201 Dragline—3 Yard. Lima 503 1⅛ Shovel and Drag. Others.
Euclids end dump and bottom dump—Tournawagons—Super C tournapulls.
Steam cranes std. ga. Gas or diesel Locs—24, 36, 43 in. ga. Elec. Locs—Std. Ga. 20 Ton. Dump Cars 55 Cu. Ft., 130 Cu. Ft., 16 cu. ft. Ore Cars Std. Ga. 50 tons
Rotary Kilns—Red Mills—16"-36" Gyratory Crushers—30x18, 40x22 Roll Crushers—40G Slugger Hammermill—9x36, 10x16, 10x36, 14x24, 18x36, 20x36, 24x36, 30x42, 40x42, 42x60 Jaw Crushers some portable some with feeders—Cone crushers 3 and 4 Ft.—Screens std. and double and triple dk. Feeders 3x10, 30x25—Dorr Classifiers—Centl. pumps—Deep well pumps—Tuggers—Mine hoists—75, 100, 150, 225 H.P.—Motors—Transformers—Conveyors—Portable Gravel Plants—Road rollers—Wagon Drills—Bu. Er. 29T and 42T Blast Hole Drills—Many other items.

STANLEY B. TROYER
Theatre Bldg. — Crosby, Minnesota

FOR SALE

Shovels ½ yd. Osgood No. 200. Cond. A-1. $6,500—$7,500.

WM. POTTS
660 Gutman Ave. — Balto, Md.

Tournapulls. Cond. A-1. $7,800—$11,000.
Parsons Ditcher No. 25. $8,000.
Floodlights 1,000,000 c.p.

WM. H. HARDING
Lansdowne, Balto, Md.

FOR SALE

1—9-16 Cedarapids Crusher, portable with Rotary Screen
1—Double Screw Scrubber and Dewaterer
2—4 inch Centrifugal Water pumps
1—Single-deck 3x6 Simplicity Screen.

JOHN KELLER & SONS
Eureka, Illinois

FOR SALE

Two Steel Tanks—18 ft. Diameter by 65 feet high—with domed roof and steel floor. Ideal for sand, gravel or general storage uses; now dismantled and ready for re-erection.

KLATZKY BROTHERS, INC.
P.O. Box 295 — Newberry, Mich.

FOR SALE

1—8" Allis Chalmers (Superior McCully) Crusher, gyratory type, in good operating condition.
1—Lippmann paddle type Sand Drag—new gears, arms, chains.
1—Bucket Elevator—30 ft. center, new buckets—drive pulley attached.

EDW. LUTZ SAND & GRAVEL CO.
5840 N. Port Washington Road
Milwaukee 9, Wisconsin
Ed. 2-3760-3761

We offer the following equipment FOR SALE at our plant at EMIL, Virginia, near Glasgow, Virginia.
1—317 Chicago Pneumatic Stationary Compressor, Serial No. 32746, cylinder size 12"x11", V-Belt drive and air tank.
1—Allis Chalmers Gates "K" No. 6 Gyratory Crusher, about No. 3960. Both in excellent condition.

LONE JACK LIMESTONE CO., INC.
P.O. Box 752 — Lynchburg, Virginia

FOR SALE

Barber-Greene portable conveyor, 18 inch belt, 24 ft. long on rubber tires with new gas motor.

L. F. LEROY
R.F.D. 1 — Geneva, Ohio

FOR SALE

One Buckeye Diesel Electric Generator Set, 240 RPM, Serial No. 9828, 190 H.P.—156 KVA, 3/60/2300—with Transformer to reduce to 220 Volts, Panel Board, 2 cylinder Horizontal. Can demonstrate. Price $2,500.00.

Northern Virginia Constr. Co., Inc.
P.O. Box 23, Alexandria, Va.
Telephone, Alexandria 2021

ALSO SEE READY-MIXED CONCRETE AND CONCRETE PRODUCTS EQUIPMENT CLASSIFIED ADVERTISING IN CONCRETE PRODUCTS SECTION

FOR SALE

200 H.P. Type "Y" Style "V" vertical oil Fairbanks-Morse Diesel Engine with 60 Cycle, 2200 Volt, 136 K.W. Western Electric Generator and Alternator. In good operating condition and can be inspected at our plant.

Write or Call

THE QUARTZITE STONE CO.
Lincoln, Kansas

SPECIAL PRICES

Transmission Belts (all widths & plies)
V-Belts (C & D Widths)
All New—Guaranteed
Large Stocks

VERY LOW PRICES

PENNWELL BELTING COMPANY
400 LAFAYETTE ST., N. Y. 3, N. Y.

A-C gyratory crushers, 36", 27", 20" Jaw Crushers, 42"x60", 36x42, 30x42, 20x36, 18x30 C.P.T. air compressor, 1574 cfm, diesel, 300 HP Manitowoc dryer 6'x50'; rotary kilns 9'x80'. Whitcomb 7-ton gas locomotive, 36" ga., rebilt. Porter, Vulcan 18-ton steam locos., 36" ga. Locomotives, gas and steam, 5 to 52 tons. Nordberg 1250 HP diesel elec. generator units. Shovels-Draglines, 1¼, 1½, 2, 2½, 3, 3½, 5 yd. B-Erie 2-1/3 yd. shovel front att., 52B-55B.

H. Y. SMITH CO. — **MILWAUKEE 2, WIS.**

FOR SALE

Complete Rotary "FAILING 314-C MODEL" Well Drilling and Coring Company with Semi-Trailers, Gasoline Powered Arc Welder, Tools, etc.

J. F. WILLIAMS
722 N. Mesquite
Las Cruces, N. M.

EQUIPMENT WANTED

WANTED

Rotary Kilns: Size 11', 10', 9' 8', 7' and 6' dia. 100' or longer.

Compeb mills: 6' and 7' dia.

Tube mills: 5', 6' an 7' dia.

Bradley Junior Pulverizer.

OLLIE E. LAWRENCE
Box 688
Quincy, Michigan

WANTED

1—5½ ft. Symons standard head coarse bowl cone crusher.

The National Lime & Stone Company
Findlay, Ohio

WANTED: TO BUY

1—30x36, or possibly 24x36, or 30x42 jaw crusher. Also, feeder for same.

VIRGINIA LIME SALES COMPANY
37 West Market Street
York, Pennsylvania

WANTED

One No. 8 Austin gyratory crusher, suspended type, to be used for parts replacement. Specify usable parts.

STEWART SAND & MATERIAL CO.
KANSAS CITY, MISSOURI

FOR SALE

1 HBH Buda deep hole earth drill, complete equipment with 25 sections 6"x5' Helix. Used but good condition.

EDGAR BROTHERS COMPANY
McIntyre, Georgia

1—36"x30' Stationary type portable apron feeder AF36-117 with full length flared sideboards and receiving hopper 8' wide less axle, wheels, tires and hitch less truss and clutch angles.
1—V-Belt drive — $6,145.00

GEO. W. KERFORD QUARRY CO.
Atchison, Kansas

BUSINESS OPPORTUNITIES

LIME PLANT FOR SALE

ONE KEYSTONE SHAFT KILN READY FOR OPERATION WITH OIL FIRING SETUP TO USE No. 6 FUEL OIL. ALL MACHINERY, OIL PUMPS AND HEATERS HAVE AMPLE CAPACITY TO HANDLE TWO ADDITIONAL KILNS BY RUNNING MORE OPERATING SHIFTS. THIS PLANT COULD BE IN OPERATION WITHIN 60 DAYS. WAREHOUSE, OFFICE AND BOILER ROOM COMPLETE. HAVE ALL STRUCTURAL STEEL AND BUILDING MATERIALS TO COMPLETE MILL BUILDING. PLANT HAS OWN RAILROAD SPUR. HAVE UNLIMITED SUPPLY OF HIGHEST QUALITY RAW STONE. REASON FOR SELLING: INSUFFICIENT CAPITAL TO COMPLETE AND OPERATE PLANT. EXCELLENT LOCAL MARKET WITH NO COMPETITION. FOR COMPLETE DETAILS CONTACT BLACKBURN CONSTRUCTION COMPANY, BOX 26, IDAHO FALLS, IDAHO.

COMPLETE ROCK PLANT EQPT.
$5250.00 F.O.B. CARS

Includes 4 El motors, starters and switch boxes, No. 5 gyratory primary, No. 4 gyratory reduction crusher, h.d. washing and sizing screen 40"x20' complete, 5 ton chain hoist, 3x5 high head pump. Good condition.

F. L. FERNALD, Tarpon Springs, Florida

LIMESTONE QUARRY
SALE OR LEASE

Located near Fremont, Ohio. Excellent opportunity. Unlimited market. Convenient terms.

Mrs. S. A. Swint — **Mansfield, Ohio**
104 Sherman Ave. — **Phone 4904-1**

CORE DRILLING

CORE DRILLING
—anywhere!
"We look into the earth"
PENNSYLVANIA
DRILLING COMPANY
Pittsburgh 20, Pa.

POSITIONS VACANT

WANTED: Sales Engineer. Equipment manufacturer wants man under forty with experience in either cement or lime production. Must be willing to travel. M.E. degree preferred. Give full particulars regarding previous experience, education, salary expected, age and family status. Write Box H-34, Rock Products, 309 W. Jackson Blvd., Chicago 6, Illinois.

SALES ENGINEERS WANTED

Young men for sales work by manufacturer of heavy machinery. Knowledge of crushing, milling and processing as related to mining and aggregate and cement production advantageous but not necessary. Qualified applicants afforded opportunity for rapid advancement. Give full particulars; age, education, previous experience in these industries and present position. All replies confidential. Our Sales Department has been advised of this advertisement. Box H-39, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

WANTED

Experienced Cement Plant Supt. or operator to assist construction of foreign plants. Must be personally qualified to operate plant and quarry when completed. State full experience, references and salary expected. Approx. two year project. Write Box H-24, c/o Rock Products, 309 West Jackson Blvd., Chicago 6, Illinois.

POSITIONS VACANT

Rock Wool Production Man: Must be capable of taking complete charge of rock wool plant in the south. Wonderful opportunity for man anxious to get ahead. Man of proven ability can become part of company. Give details of past experience, reference, etc. All information strictly confidential. **Write Box H-32, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.**

POSITION VACANT: Wanted for a cement plant in the West Indies an Electrical Engineer capable of supervising the operation and maintenance of a steam power plant, and the maintenance of the electrical equipment in the plant. Will enter into a one year contract, with travel expenses paid both ways. The power plant consists of oil fired boilers and turbo generators with auxiliaries. Give full particulars regarding age, family status, education, previous experience and salary expected. Write Box No. H-35, Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

MANAGER. Twenty years experience in quarry operations and the production of crushed stone, sand and gravel. Full knowledge of materials business in all phases. Complete supervision production and sales. Any location. Write Box H-14, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

POSITIONS WANTED

WANTED: Cement Plant Supt. One who has a thorough knowledge of the chemical and mechanical functions of plant operation. Write Box H-33, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

CONSULTING ENGINEERS

Quarries
Crushing Plants
Cement Plants
Storage Methods
Operating Costs

E. LEE HEIDENREICH JR.
Consulting Engineers
67 Second Street, Newburgh, N. Y.
Phone 1828

Operation
Plant Layout
Design
Appraisals
Construction

STEEL

Every Kind

Quick Delivery

Plates, Structurals, Bars, Sheets, Tubes, etc. Carbon, Alloy, Stainless Steels, Babbitt Metal.

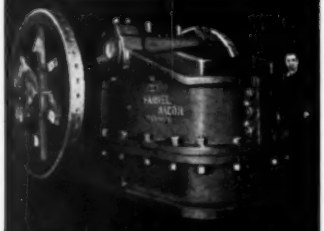
RYERSON

Joseph T. Ryerson & Son, Inc. Plants: New York, Boston, Philadelphia, Detroit, Cincinnati, Cleveland, Pittsburgh, Buffalo, Chicago, Milwaukee, St. Louis, Los Angeles, San Francisco

New FARREL-BACON CRUSHER has many advantages

Design features of this 36 x 30 E stone crusher include: (1) Meehanite frame, sectionalized when necessary; (2) removable water cooled bearings; (3) improved design of swing jaw bearing; (4) force-feed oil lubrication, or circulating system if desired; (5) split flywheels; (6) flat or V-belt drive.

Write for further details or engineering help. BA-1



FARREL-BACON
ANSONIA, CONNECTICUT

INDEX TO DISPLAY ADVERTISERS

ALSO SEE INDEX OF CONCRETE PRODUCTS SECTION ADVERTISERS ON PAGE 162

Ajax Flexible Coupling Co., Inc. 166
Allis-Chalmers 16, 31, 43
Allis-Chalmers, Tractor Div. 4, 5
American Hoist & Derrick Co. 124
American Pulverizer Co. 120
Armstrong Bray & Co. 168

Barber-Greene Co. 17
Bemis Bros. Bag Co. 48
Berg Vault Co. 168
Bradley Pulverizer Co. 122
Bucyrus-Erie Co. 50

Caterpillar Tractor Co. 119
Chain Belt Co. 32
Chevrolet Motor Division 34
Chicago Perforating Co. 168
Colorado Iron & Fuel Corp. 30
Combustion Engineering—Superheater, Inc. 21

Denver Equipment Co. 36
Detroit Diesel Engine Division 12, 13
DuPont, E. I., de Nemours & Co., Inc. 40

Easton Car & Construction Co. 25
Ellicott Machine Corp. 49
Ehrsam, J. B., & Sons 169
Esse Radio Co. 168

Farrell-Bacon 178
Firestone Tire & Rubber Co. 27
Flexible Steel Lacine Co. 179
Ford Motor Co. 57, 169
Fuller Co. 46, 47

Gates Rubber Co. 44
General Motors Corp. 12, 13, 34
Gilson Screen Co. 124
Goodrich, B. F., Co. 3
Goodyear Tire & Rubber Co. 9

Harnischfeger Corp. 29
Hayward Co. 168
Heil Co. 39
Heltzel Steel Form & Iron Co. 121
Hercules Powder Co. 62
Hetherington & Berne Inc. 165
Hewitt-Robins, Inc. 52
Hough, Frank G., Co. 60

International Harvester Co. 6

Jaeger Machine Co. 169
Johnson, C. S., Co. 10, 11
Joy Mfg. Co. 8

Kennedy-Van Saun Mfg. & Engr. Corp. 35
Koehring Co. 10, 11

Leschen, A. & Sons Rope Co. 122
Le Tourneau, R. G., Inc. 114, 115
Link Belt Co. 1
Lippmann Engineering Works 51
Ludlow-Saylor Wire Co. 58

McLanahan & Stone Corp. 28
Madesco Tackle Block Co. 165
Mine & Smelter Supply Co. 122

National Wire Cloth Co., Inc. 169
New Holland Mfg. Co. Inside Back Cover
Nordberg Mfg. Co. 26
Northern Blower Co. 24

Owen Bucket Co. 166

Pennsylvania Crusher Co. Back Cover
Pioneering Engineering Works 14, 15

Quaker Rubber Corporation 41
Quick Way Truck Shovel Co. 33
Quinn Wire & Iron Works 168

Raymond Pulverizer Division 21
Resisto-Loy Co. 42
Ryerson, J. T., & Son, Inc. 178

Sauerman Bros., Inc. 120
Screen Equipment Co., Inc. 22, 23
Shamrock Hotel 18
Sheffield Steel Corp. 116
Sintering Mchy. Corp. 123
Smidth, F. L., & Co. 54
Smith Engineering Works 45
Stoody Co. 53
Syntron Co. 123

Texas Co. 68
Thermoid Co. 64
Trackson Co. 111
Traylor Engineering & Mfg. Co. 7
Twin City Iron & Wire Co. 166
Tyler, W. S., Co. 168

U. S. Electrical Motors, Inc. 37, 38
United States Rubber Company 19
Universal Road Mchy. Co. 166
Universal Vibrating Screen Co. 122

Vulcan Iron Works 179

Wellman Engineering Co. 167
Wickwire Spencer Steel Div. 30
Wilfley, A. R., & Sons 166
Williams Patent Crusher & Pulverizer Co. Inside Front Cover

INDEX TO CLASSIFIED ADVERTISERS

Business Opportunities 161, 177
Cement Colors 161
Consulting Engineers 177
Core Drilling 177
Equipment Wanted 161, 177
For Sale 159, 160, 161, 170, 171, 172, 173, 174, 175, 176, 177
Forms For Sale 161
Positions Vacant 161, 177
Positions Wanted 177
Pumice For Sale 161

ALSO SEE INDEX OF CONCRETE PRODUCTS SECTION ADVERTISERS ON PAGE 162

Acme Equipment Co. 170
Acme Road Machinery Co. 170
Albert Pipe Supply Co., Inc. 170
Anthony Truck Co. 175
Arundel Corp. 170

Bacon-Pietsch Co., Inc. 170
Baker, George 175
Basic Construction Materials 171
Baton Coal Co. 171
Battle Creek Concrete Products Co. 176
Birmingham Rail & Locomotive Co. 170
Blackburn Construction Co. 177
Blue Diamond Corp. 170
Bonded Scale & Machine Co. 174
Brew, Woltman & Co., Inc. 174
Brill Eqpt., Co. 174

Carlyle Rubber Co., Inc. 173
Coast Eqpt. Co. 174
Cold Mix, Inc. 176
Conrad Brothers 176
Coogan Gravel Co. 171
Corson, G. & W. H., Inc. 176
Cowan Stone Co. 176

Deppe Lumber Co. 176
Dillon, Sharpe & Co. 171, 176
Dunbar, K. L., Co. 176

Edgar Bros., Co. 177
Ellis-Novack Co. 170
Emerson Electric Co. 175

Fernald, L. F. 177
Foster, L. B. Co. 174
Frank, M. K. 176

Gerald Associates, Inc. 171
Glens Falls Portland Cement Co. 176

Hall & Riley Quarries 176
Hamilton, J. M., & Sons Co. 176
Hasbrouck Sand & Gravel Co. 176
Harding, Wm. H. 176
Hawkins & Co. 172
Heat & Power Co., Inc. 174
Hector Construction Co. 176
Heidenreich, E. Lee, Jr. 177
Hudson River Concrete Products 176

Johnson & Hoehler, Inc. 175

Keller, John, & Sons 176
Kerford, Geo. W., Quarry Co. 177
Klatzky Brothers, Inc. 176
Kremser, Frank A., & Sons, Inc. 171, 174

Lawrence, Ollie E. 172, 177
Leroy, L. F. 176
Lone Jack Limestone Co., Inc. 176
Lutz, Edw., Sand & Gravel Co. 176

McLeod, Alex T. 175
Memphis Stone & Gravel Co. 173
Mid-Continent Eqpt. Co., Inc. 171
Miller, James C. Stone Co. 173
Mississippi Valley Eqpt. Co. 175

National Lime & Stone Co. 177
Neiswander, Robert L. 172
Northern Virginia Construction Co., Inc. 176
Northwest Magnesite Co. 170
Nussbaum, V. M., & Co. 170

O'Neill, A. J. 172

Pacific Mchy. & Engr. Co. 173
Pennsylvania Drilling Co. 177
Pennwell Belting Co. 177
Potts, Wm. 176

Quartzite Stone Co. 177

Riverton Lime & Stone Co., Inc. 172
Rockwell Lime Co. 172

Shiely, J. L. Co. 176
Smith, H. Y., Co. 177
Spicer Gravel Co. 175
Stanhope, R. C., Inc. 172
Stewart Sand & Material Co. 177
Stuart Brothers 170
Swint, Mrs. S. A. 177

Thompson, J. Marshall 173
Thygesen, Henry & Co. 173
Tractor & Eqpt. Co. 172
Troyer, Stanley B. 176
Tyler Cement Tile & Silo Works 176

Unverzagt, G. A., & Sons, Inc. 175

Virginia Lime Sales Co. 177

Walsh, J. T. 175
Walsh, Richard P., Co. 171
Waukesha Washed Sand & Gravel Co. 173
Weiss, B. M., Co. 176
Williams, J. F. 177

FLEXCO

HD

BELT FASTENERS AND RIP PLATES

FOR HEAVY CONVEYOR AND ELEVATOR BELTS OF ANY WIDTH

Flexco HD Fasteners make a tight, butt joint of great strength and durability . . . distribute the strain uniformly. Operate smoothly over flat, crowned or take-up pulleys. Made of steel, Monel, Everdur and Promal.

Flexco Rip Plates are for repairing and patching damaged belts.

Ask for Bulletin F-100

FLEXIBLE STEEL LACING COMPANY

4684 Lexington St., Chicago 44, Illinois

Strong, Smooth and Readily Troughing.

Order From Your Supply House

One of many Vulcan Diesel-Mechanical Locomotives used by a large cement company for hauling rock from quarries to crushing plants.

VULCAN LOCOMOTIVES

have been manufactured continuously since 1874 and thousands are now in operation throughout the United States and many other countries. Available in all types—Steam, Fireless, Electric, Gasoline, Diesel and Diesel-Electric—and in any size from three tons to more than 200 tons.

Write us regarding any locomotive requirement. Money-Saving special designs developed, when necessary, without charge or obligation.

1849 VULCAN CENTENNIAL 1949

VULCAN Iron Works

WILKES-BARRE, PENNA.

1 2 3 4 5 6 7 8 9

JOIN THESE TOP EXECUTIVES

10 11 12 13 14 15 16 17 18

IN MAKING YOUR BUSINESS SECURE!

19 20 21 22 23 24 25 26 27

You're looking at the Industrial Advisory Committee for the United States Treasury Department. For the good of the nation's business generally—and of their own companies specifically—these men have been applying their talents and prestige all year to promoting sales of U. S. Savings Bonds via the Payroll Savings Plan.

They have sponsored the Plan in their own plants. They have made speeches, written letters, and boosted participation in the Plan among other companies in their fields. During the past 12 months, these industrial leaders have helped bring about the greatest surge in Payroll Savings participation. Now over 20,000 large companies have introduced this plan, and more than 7,500,000 employees are signed up for security. They are saving over $150,000,000 per month!

With their keen business vision and experience, these men fully appreciate how sales of Savings Bonds benefit everyone: the individuals who buy them, the companies that operate the Payroll Savings Plan, and the nation over-all.

Is your company getting its full share of the Plan's benefits? To find out, call your State Director, U. S. Treasury Department's Savings Bonds Division.

1 JAMES B. BLACK, *Pres., Pacific Gas & Electric Co.*
2 ALBERT BRADLEY, *Ex. V. P., General Motors Corp.*
3 EARL BUNTING, *Managing Director, National Assn. of Mfgrs.*
4 PAUL F. CLARK, *Chrm., Board of Dir., John Hancock Mutual Life Ins. Co.*
5 PHILIP R. CLARKE, *Pres., City Nat'l. Bank & Trust Co.*
6 MARTIN W. CLEMENT, *Pres., Pennsylvania Railroad*
7 FREDERICK C. CRAWFORD, *Pres., Thompson Products, Inc.*
8 JOSEPH WOOD EVANS, *Pres., Evans & Company*
9 EUGENE FLACK, *Past Pres., Natl Fed. of Sales Executives*
10 ROBERT FLEMING, *Pres., Riggs National Bank*
11 CLARENCE FRANCIS, *Chrm. of Board, General Foods Corp.*
12 ALEXANDER FRASER, *Pres., Shell Union Corp.*
13 WALTER D. FULLER, *Pres., Curtis Publishing Co.*
14 EUGENE G. GRACE, *Chairman, Bethlehem Steel*
15 H. FREDERICK HAGEMANN, *Jr., Chrm., ABA Treas. Savings Bonds Comm.*
16 HARRY B. HIGGINS, *Pres., Pittsburgh Plate Glass Co.*
17 JOHN HOLMES, *Pres., Swift & Company*
18 CHARLES HOOK, *Chairman, Armco Steel Corp.*
19 GALE JOHNSTON, *Pres., Mercantile Commerce Bank & Trust Co.*
20 WILLIAM R. KUHNS, *Secy., ABA Savings Bonds Committee*
21 THOMAS B. McCABE, *Chrm. of Board, Federal Reserve System*
22 ERNEST MAHLER, *Exec. V. P., Kimberly Clark Corp.*
23 JOHN J. O'CONNOR, *Finance Dept., U. S. Chamber of Commerce*
24 PHILIP D. REED, *Chrm. of Board, General Electric Co.*
25 HERBERT E. SMITH, *President, U. S. Rubber Co.*
26 J. P. STEVENS, *Pres., J. P. Stevens & Co., Inc.*
27 WALTER WHITE, *Asst. to the Chrm. of Business Advisory Council for Department of Commerce*

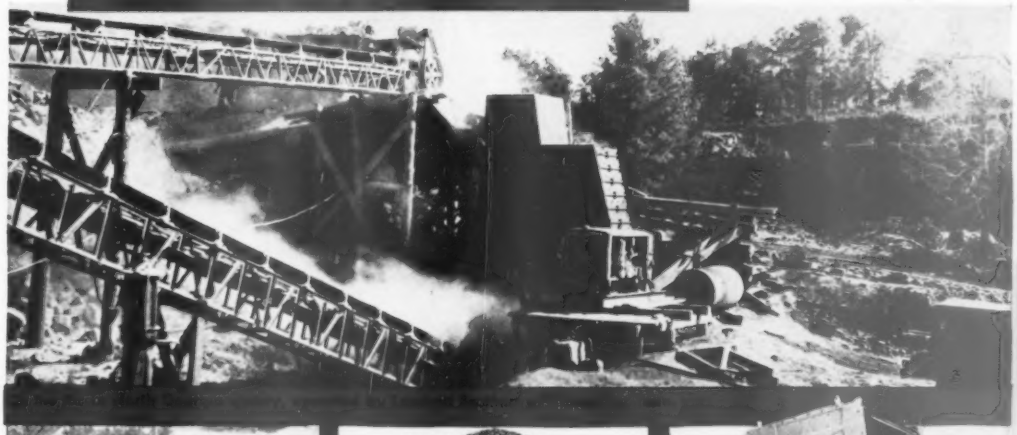
The Treasury Department acknowledges with appreciation the publication of this message by

ROCK PRODUCTS

This is an official U. S. Treasury advertisement prepared under the auspices of the Treasury Department and the Advertising Council.

In Georgia limestone . . .

Dual Impact Action does it again



New Holland Model 5050 Double Impeller Breaker

reduces 50" material to commercial sizes in single pass . . .

• **Like all New Holland Breakers,** the new Model 5050, recently installed by Lambert Brothers, is a field development . . . designed to work in all types of rock, under all conditions . . . built to produce maximum aggregate at minimum cost. Simple, sturdy construction keeps costs *down*—production *up*.

Here are some quick facts—more on request:

Produces up to 400 tons per hour on 300 h.p. Heavy duty steel outer plates. Interior lined with manganese steel wear plates. Spherical roller bearings. All parts accessible; all adjustments easily made by average workman. Mounted on heavy I-beams to simplify installation. Weight 54 tons.

New Holland Double Impeller Breakers are used, recommended by operators everywhere. Get the facts. Write for complete information including location of installation nearest you. Address: Department R-39.

Read what W. E. Lambert, of Lambert Brothers, Knoxville, Tenn., says about New Holland Model 5050 Double Impeller Breaker shown above.

"The ability of this breaker to reduce 50" material to commercial sizes in one pass is remarkable . . ."

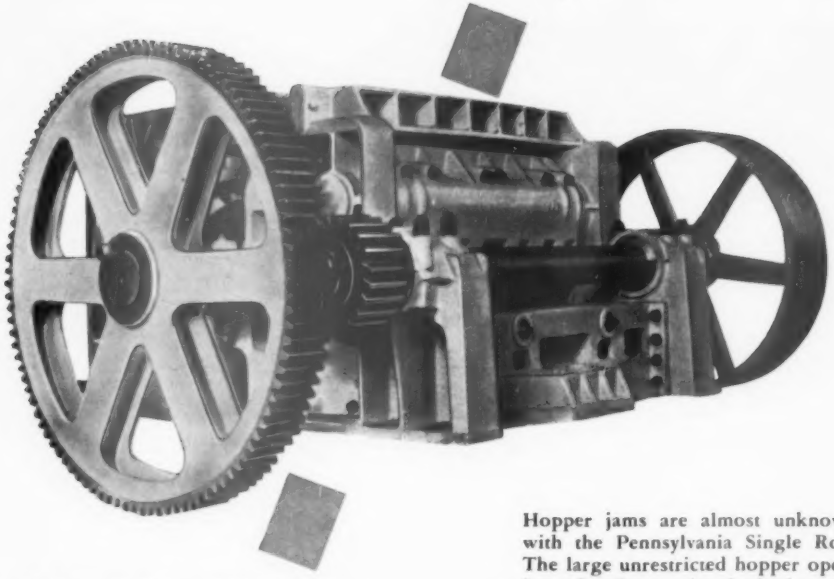
W. E. Lambert

NH

NEW HOLLAND DOUBLE IMPELLER BREAKERS

NEW HOLLAND MANUFACTURING COMPANY, MOUNTVILLE, PA.

Affiliate of the Sperry Corp.



SLOPPY FEEDS
DON'T PLUG OR STALL
a PENNSYLVANIA
Single Roll Crusher

Hopper jams are almost unknown with the Pennsylvania Single Roll. The large unrestricted hopper opening, plus the continual nipping and churning of the rock by the staggered revolving roll teeth, assures continuous choke feed operation minus "jams" and holdups. This means a saving in hopper labor and fewer production delays.

There is no slow milling or packing in the maw with a Pennsylvania; the roll teeth draw the stone in, causing the rock to feed freely, thereby making the entire process fast and snappy. That's why Pennsylvanias have a great consuming capacity and hang up records for production under year round conditions. May we help you with your crushing problems?

PENNSYLVANIA CRUSHER CO.
Liberty Trust Building, Philadelphia 7, Pa.

Branches in New York, Pittsburgh, Chicago, Los Angeles, Birmingham. Associated with Fraser & Chalmers Engineering Works, London

PENNSYLVANIA CRUSHER COMPANY

DIVISION OF BATH IRON WORKS CORPORATION

Manufacturers of a complete line of crushing equipment • Hammermills • Single Rolls • Bradmills • Jaws • Gyratories • Granulators • Impactors • Bradford Breakers